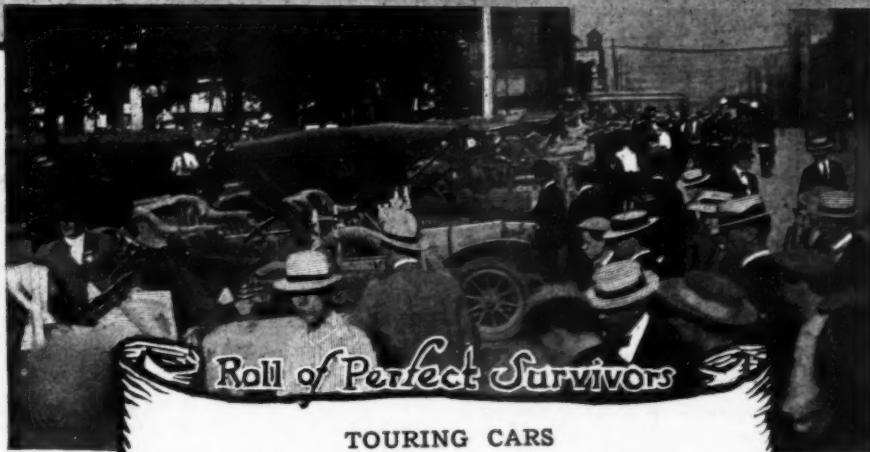


THE AUTOMOBILE

NEVER BEFORE WERE AUTOS SO SEVERELY
TRIED AS IN THE BIG A-A-A TOUR

By
A. G. Batchelder



Roll of Perfect Survivors

TOURING CARS

| Car. | Make. | H.P. | Entrant. | Driver. |
|--------|------------|-------|----------------|----------------|
| No. 3 | Pierce | 40-45 | R. D. Garden | J. Williams |
| No. 14 | Pierce | 40-45 | Phil. S. Flinn | Thomas Dunn |
| No. 17 | Pierce | 60-65 | E. S. Day | E. S. Day |
| No. 27 | Pierce | 40-45 | A. Kumpf | A. Kumpf |
| No. 9 | T. Flyer | 60 | G. S. Salzman | G. S. Salzman |
| No. 11 | T. Flyer | 60 | M. Hallowell | C. Richard |
| No. 47 | White | 30 | W. C. White | W. C. White |
| No. 48 | White | 20 | A. J. Scaife | A. J. Scaife |
| No. 49 | Peerless | 30 | C. H. Burman | C. H. Burman |
| No. 50 | Peerless | 30 | W. C. Straub | W. C. Straub |
| No. 22 | Packard | 30 | H. H. Perkins | Oscar Theurer |
| No. 54 | Haynes | 50 | Edward Noble | Edward Noble |
| No. 29 | Welch | 50 | G. P. Moore | G. P. Moore |
| No. 33 | Reo | 16 | R. M. Owen | R. M. Owen |
| No. 31 | Walter | 40 | E. S. Lea | Edward Walter |
| No. 39 | Berliet | 40 | A. N. Jervis | H. C. Townsend |
| No. 42 | R. Tourist | 45 | R. H. Tucker | R. H. Tucker |
| No. 19 | Premier | 24 | G. A. Weldely | J. W. Moore |
| No. 15 | Am. Mors | 25 | G. Cabanne | F. A. Sharpe |

RUNABOUTS

| | | | | |
|---------|------------|----|----------------|----------------|
| No. 104 | Stod.-Day. | 35 | G. S. Smith | G. S. Smith |
| No. 108 | White | 30 | H. K. Sheridan | H. K. Sheridan |

TWENTY-ONE clean-score twelve-day endurance were ever called upon to ac-driven vehicle modestly began yesterday in New York City. start on Wednesday, July 10. that are a disgrace to the State tent and execrable highway in the mountains of Western Pennsantly interrupted by water-Maryland and gave a sublime toric country; turned north-and bumpy turnpikes of East-concluded on the macadam New Jersey. Nearly sixteen changeable American road, but mobiles are asked to travel

And it was done on a sched-fast on some days and too slow horsepower of your car—but a the ordinary tourist would at-ing for pleasure or traveling for necessity, and, in consequence, furnishes no criterion for a touring time table.

Extraordinary conditions were further required in the matter of repairs, for the rules said that only yourself and your mechanic could work on the car, and then only with what you carried; if you used extra parts, there was penalization. At the finish of the day's run your car was taken away and did not return to your possession until the beginning of the next day's journey. Then, after you were on your way, you could give it the meager attention which all machinery should receive to enable it to perform most capably and enjoy a long life.

It was abusive and unusual, the treatment—or lack of it—which the cars received, and that they should survive and endure and proceed was a source of wonderment, more to those who knew and realized the exact conditions than to the thousands of on-lookers who did not comprehend the task to which the mud-caked and uncleared autos were put as they willingly ploughed forward, intent upon reaching the goal in the metropolis of the country.

True, the rules may be vastly improved upon, there may be better but no more hard-working chairman than Mr. Hower, another year a more interesting route may be selected, and other things might happen, but the 1907 Fourth Annual Tour of the American

survivors of the very hardest touring to which automobiles complish since the motor-its cumulative career, ended Cleveland was the scene of the The route led over roads of Ohio; comprised both excel-Indiana and Illinois; traversed sylvania, with progress inces-bar jolting; dropped down into glimpse of picturesque and his-ward and followed the dusty ern Pennsylvania; and then thoroughfares of enlightened hundred miles of typical, of exactly the kind which auto-over every day.

ule which might have been too on others—according to the schedule far in excess of what tempt to accept either in tour-

Automobile Association was worth while: a benefit to buyers and a great proving test for the makers of cars. It should be viewed in its general aspects and the picking of flaws which undoubtedly existed will not wipe out the general good that has and will follow in the wake of such a big event—the most pretentious and best conducted affair of this character yet held in this country.

Fourteen different makes of automobiles grace the list of those which came through without any penalization. But, in all fairness, there should be taken into consideration the fact that not a few of those which suffered more or less depletion of their original 1,000 points through troubles that were either not mechanical or else of a minor nature, a half dozen or more in the finishing miles of the Canton-Pittsburg run—the worst link of the variable cross-country chain—met with punctures owing to the miserable road surface. These, despite the exceptional liberality of the police authorities in Allegheny and Pittsburg, were unable to reach the Hotel Schenley before the expiration of a schedule which on this particular day was a bit close and compelled cars having difficulties to do some tall hustling. And some of the drivers hesitated at racing through the streets even with a fairly good police protection.

The rules required a contestant who made replacements of parts other than what he carried along with him to become a non-contestant, and while some persisted and completed the long journey for the stubborn satisfaction of saying so, others could see little glory and a lot of useless work in this proceeding. In the carrying of these extra parts not a few of those who had no opportunity of gaining experience in previous tours were somewhat at loss to estimate what might be actually needed. The parts carried along did not always necessarily mean that the cars were weakest in these particulars, and more frequently that which was needed was of small cost and often it happened to be just the thing that had been left behind. Therefore, the list printed on another page is not mechanically valuable, but will satisfy the curiosity of those who speculated as to the assortment which might be carried for exceptional endurance emergencies.

"And Buffalo Retains the Glidden Trophy."

The Buffalo and Pittsburg clubs quickly became the real contenders for the possession of the Glidden trophy, the other clubs dropping out of the contest early in the race. When Buse of Buffalo went astray on the road and lost points, there was undisguised elation in the Smoky City camp. When Jones of that city smashed into a mail carrier's cart and did other similar stunts and lost more points than his unfortunate rival, the Bisons did some shouting which was loud and prolonged. Another year it is probable that more care will be taken in the selection of teams, and possibly they might be limited in number and several teams come from the same club. This is an idea of Mr. Glidden, who rode through the entire tour in Chairman Hower's car and naturally figured as a notable all along the line.

The Runabout Contest for the Hower Trophy.

When the call came, somewhat insistent, for the admission of runabouts on an equality with the touring cars, Chairman Hower came to the fore and supplied a trophy for this class. It was rather a matter of surprise that the runabouts incurred penalties, one after another, with great regularity until finally only two were

left—Sheridan with a White and Smith with a Stoddard-Dayton. These two drove with careful judgment and each day seemed to adhere to a steady pace that took not into consideration the doings of their opponents, some of whom appeared unable to resist the temptation of utilizing their horsepower and then loafing for an hour and often several before checking-in time arrived.

Enthusiasm All Along the Line.

From Cleveland to Chicago and back to New York City the autoing caravan was a source of attraction in every city, town and village, and often in the country there were picnic parties which had assembled for the sole purpose of watching the passing of the up-to-date users of the road. There has been established by the participants in endurance runs an inviolate rule that not one splash of mud shall be washed from their cars nor one speck of dirt removed from their clothing. Under ordinary conditions and attired in their riding garb, automobilists look somewhat ineligible for an appearance competition, but when they have proceeded for several days might easily be mistaken for "Weary Willies" of the road if they were proceeding on foot. "General" Coxey had some facetious comments to make at Massillon, and the inmates of an asylum in another town looked askance at the flying procession in such a way as to cause one to believe that those mentally bereft believed that the wrong ones were under surveillance. If someone will start a crusade for cleanliness among automobilists while on an endurance tour—admitting that more dirt will be accumulated on the following day, but why carry all the dirt which sticks—the public might be disabused of the idea that automobilism is the dirtiest kind of traveling.

But the progress of the 1907 tour was a source of enjoyment and great interest from beginning to end, and the attention of the thousands that saw and of the thousands more that read added immensely to the volume of automobile interest and enthusiasm which are evident in nearly every city and hamlet of the country—and certainly in all places that were on the route of the great tour just concluded.

Talk Even Now of a 1908 Tour.

What should be next year? was the matter discussed vigorously during the tour and at its wind-up. Chairman Hower believes that you cannot combine an endurance contest with a pleasure tour. Others have said so before, but this year's event was the third effort by the A. A. A. with a combination run. It must be voted a success and generally beneficial, but the room for improvement still remains and there should be careful planning, starting now for next year's run.

The tour this year was too long. One week is enough. In six days' running the abilities of a car can be demonstrated or its weak points discovered sufficiently to answer all practical purposes. A mid-day control will lessen the unnecessary physical hardships inflicted upon drivers and passengers and lend an essential innings of rest which will not lessen the strenuousness as far as the cars are concerned. Of course, there should be observers, and if any entrant selects an incompetent observer he will have only himself to blame, for if he is wise he will pick one of his most experienced engineers to ride in the cars of the other fellows. This accepts in advance the assurance that a contest with observers will be for makers and not for amateur owners.

FINAL DAY'S RUN WAS THE EASIEST OF ALL

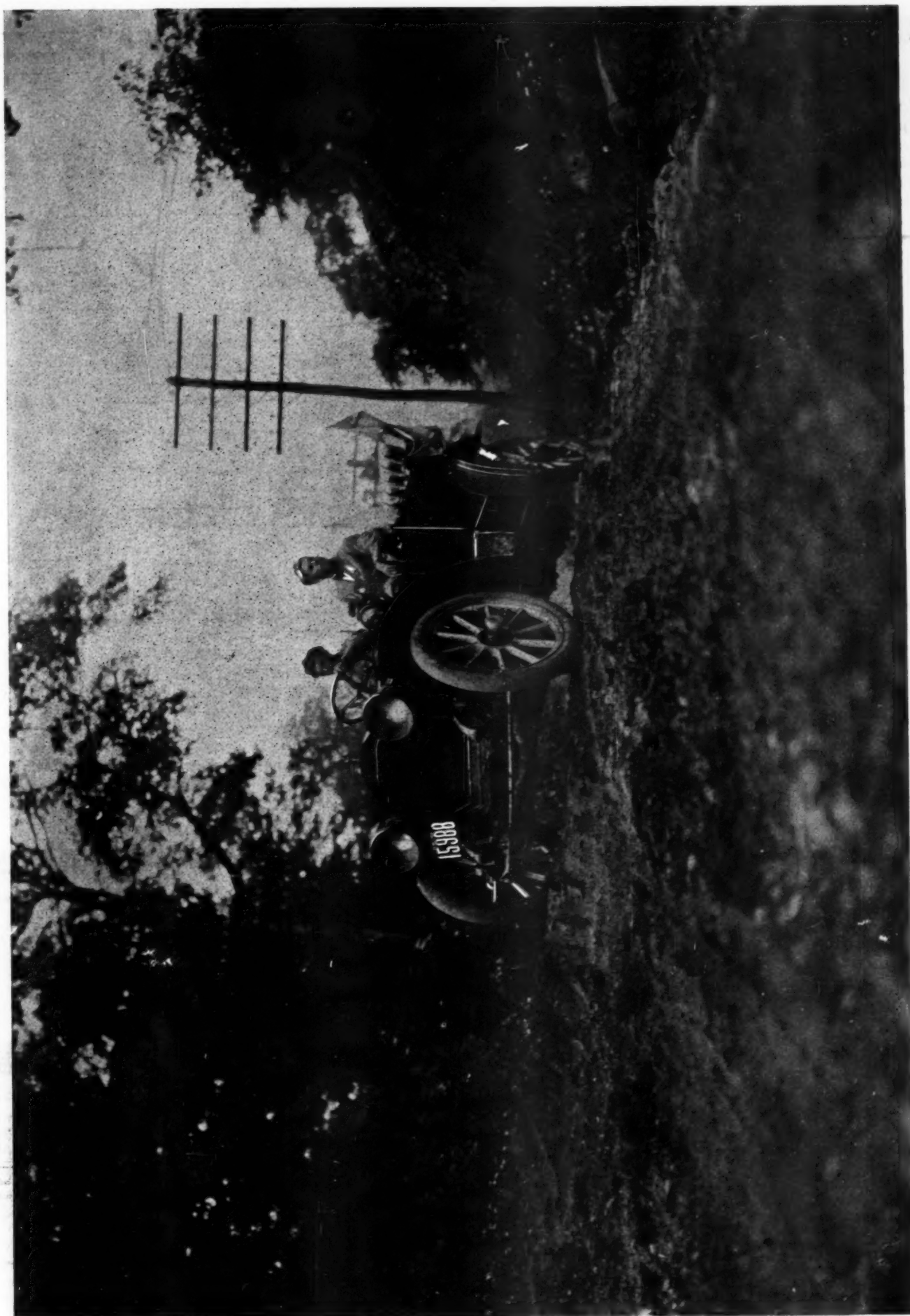
NEW YORK, July 24.—From Philadelphia to New York is slightly under a century, but the good roads of New Jersey are often quickly covered, despite the present law in that State. Confetti-Chief Lewis had as a companion in leaving Quakerville Dr. J. R. Overpeck, driving a Walter, who showed the most available route to reach the open country. At Trenton, the home of the Walter car, this concern gave basket luncheons to

the eager tourists, who, sniffing the salt air afar, were eager to reach Jersey City and feast their eyes upon metropolitan grandeur. Here the White Company thoughtfully supplied coffee and sandwiches at the checking-in place in front of the City Hall. Of course, there was a wait of a couple of hours until the entire cavalcade had arrived. Not a single one met with a penalty, and even the stragglers, who had been catching up for several days

DETAILS OF CARS WHICH PERFORMED MOST CAPABLY

THESE CARS CHECKED OUT OF BEDFORD SPRINGS, 1,160 MILES OF THE 1,570 TOTAL.

| CAR | Motor | Ignition | Transmission | Clutch | Drive | Wheelbase | Tires |
|--|---|---|---|--------------------------|---------------------------|---------------|----------|
| Acme: No. 43..... | 4 cylinders, separate; 4½ x 5 bore and stroke; 32 horsepower..... | Eiseman high tension magneto and batteries.. | Sliding gear, selective; 3 speeds and reverse..... | Cone..... | Side chains.. | 102 ins.... | Diamond |
| American Mors: No. 10..... | 4 cylinders in pairs; 5 x 6 bore and stroke; 40 horsepower..... | Mors low-tension magneto and storage batteries..... | Sliding gear, progressive type, 4 speeds and reverse..... | Leather-faced Cone..... | Side chains.. | 120 ins. ... | Diamond |
| No. 15..... | 4 cylinders, in pairs; 4 5-16 x 6 bore and stroke; 24 horsepower.. | | | | | 106 ins. ... | Goodrich |
| Berliet: No. 39..... | 4 cylinders in pairs; 4½ x 5½ bore and stroke; 40 horsepower..... | Simms-Bosch low tension | Sliding gear, selective type, 4 speeds and reverse..... | Multiple disc.. | Side chains.. | 126 ins. ... | Diamond |
| Dragon: No. 112..... | 4 cylinders, in pairs; 4 x 4½ bore and stroke; 24-26 horsepower.... | Jump spark, storage batteries..... | Sliding gear, progressive, 3 speeds and reverse.... | Cone..... | Shaft..... | 104 ins. ... | Diamond |
| Elmore: No. 51..... | 4 cylinders, pairs two-cycle; 4½ x 4 bore and stroke; 32 horsepower.. | Jump spark, storage batteries..... | Sliding gear, selective type, 3 speeds and reverse..... | Internal expanding..... | Shaft..... | 104 ins. ... | Hartford |
| Gaeth: No. 28..... | 4 cylinders, pairs; 4½ x 5 bore and stroke; 35 horsepower..... | Splitdorf low-tension magneto..... | Sliding gear, progressive, 3 speeds and reverse.... | Contracting band..... | Shaft..... | 112 ins. ... | Diamond |
| Haynes: No. 54..... | 4 cylinders, separate; 5½ x 6 bore and stroke; 50 horsepower..... | Remy high-tension magneto and batteries..... | Sliding gears, selective, 3 speeds and reverse..... | Haynes individual..... | Shaft..... | 109 ins.... | Diamond |
| No. 55..... | 4 cylinders, separate; 4½ x 5 bore and stroke; 30 horsepower..... | Simms-Bosch high-tension magneto..... | Sliding gears, selective, 3 speeds and reverse..... | | Shaft..... | 102 ins.... | Diamond |
| Maxwell: Nos. 41 and 58.. | 2 cylinders, opposed; 5 x 5 bore and stroke; 16-20 horsepower.... | Jump spark..... | Sliding gear, 3 speeds and reverse..... | Multiple disc.. | Shaft..... | 86 ins. ... | Goodrich |
| Oldsmobile: No. 32..... | 4 cylinders, in pairs; 4½ x 4½ bore and stroke; 40 horsepower..... | Jump spark..... | Sliding gear, selective, 3 speeds and reverse.... | Inverted cone.. | Shaft..... | 106½ ins. .. | Goodrich |
| Packard: No. 22..... | 4 cylinders, in pairs; 4½ x 5 bore and stroke; 24 horsepower.... | Simms-Bosch high-tension magneto..... | Sliding gear, progressive, 3 speeds and reverse.... | Multiple disc.. | Shaft..... | 119 ins. ... | Goodrich |
| No. 44..... | | | | | | | Goodrich |
| No. 90..... | | | | | | | Diamond |
| Peerless: Nos. 49 and 50.. | 4 cylinders, in pairs; 4½ x 5½ bore and stroke; 30 horsepower..... | Eiseman high-tension magneto and Fulmen batteries..... | Sliding gear, selective, 4 speeds and reverse..... | Expanding..... | Shaft..... | 109 ins. ... | Goodrich |
| Pierce: Nos. 3, 14, 21, 27, 100..... | 4 cylinders, separate; 5 x 5½ bore and stroke; 45 horsepower..... | Simms-Bosch high-tension magneto and storage batteries..... | Sliding gear, progressive, 4 speeds and reverse.... | Cone..... | Shaft..... | 124 ins. ... | Goodrich |
| Nos. 17 and 99.. | 6 cylinders, pairs; 4½ x 4½ bore and stroke; 75 horsepower..... | Simms-Bosch high-tension magneto..... | Sliding gear, progressive, 3 speeds and reverse.... | Cone..... | Shaft..... | 136 ins. | Diamond |
| Premier: No. 19..... | 4 cylinders, separate; 4½ x 4½ bore and stroke; 24 horsepower..... | Jump spark, storage batteries..... | Sliding gear, selective, 3 speeds and reverse..... | Multiple disc.. | Shaft..... | 109 ins. ... | Diamond |
| No. 98..... | 6 cylinders, pairs; 40-45 horsepower..... | Simms-Bosch low-tension magneto and batteries.. | Sliding gear, selective, 3 speeds and reverse..... | Multiple disc.. | Shaft..... | 124 ins. | Diamond |
| Rainier No. 26..... | 4 cylinders, pairs; 4½ x 5½ bore and stroke; 30-35 horsepower.... | Simms-Bosch low-tension magneto..... | Sliding gear, progressive, 3 speeds and reverse.... | Cone..... | Shaft..... | 104 ins. ... | Diamond |
| Reo: Nos. 33 and 34.. | 2 cylinders, opposed; 4½ x 6 bore and stroke; 16 horsepower..... | Jump spark, storage batteries..... | Planetary, 2 speeds and reverse..... | Friction disc... | Single chain.. | 94 ins. ... | Goodrich |
| Royal Tourist: No. 42..... | 4 cylinders, pairs; 5½ x 5½ bore and stroke; 45 horsepower..... | Simms-Bosch high-tension magneto and storage batteries..... | Sliding gear, progressive, 4 speeds and reverse.... | Cone..... | Shaft..... | 114 ins. ... | Diamond |
| Stoddard-Dayton: Nos. 38 and 104.. | 4 cylinders, pairs; 4½ x 5 bore and stroke; 35 horsepower..... | Jump spark, storage batteries..... | Sliding gear, selective, 3 speeds and reverse..... | Cone, leather-faced..... | Shaft..... | 105½ ins. .. | Goodrich |
| Thomas Flyer: Nos. 9, 11, 13, 60. | 4 cylinders, separate; 5½ x 5½ bore and stroke; 60 horsepower..... | Simms-Bosch high-tension magneto..... | Sliding gear, selective, 4 speeds and reverse..... | Multiple disc.. | Side chains.. | 118 ins. ... | Goodrich |
| Walter: No. 31..... | 4 cylinders, pairs; 5 x 5½ bore and stroke; 40 horsepower..... | Eiseman high-tension magneto and batteries.. | Sliding gear, selective, 3 speeds and reverse..... | Cone..... | Shaft..... | 124½ ins. ... | Goodrich |
| Welch: Nos. 7 and 29.. | 4 cylinders, pairs; 4½ x 5 bore and stroke; 50 horsepower..... | Simms-Bosch magneto and batteries..... | Sliding gear, 3 speeds and 2 reverse..... | Multiple disc.. | Shaft..... | 129 ins. ... | Diamond |
| White Steamers: Nos. 47, 108..... | High-pressure cylinder; 3 x 4½ bore and stroke; 10 horsepower.. | Low-pressure cylinder, 6 x 4½ bore and stroke.. | "Flash" Generator..... | Shaft drive..... | 115 and 104-in. wheelbase | | Diamond |
| Nos. 40, 48 and 61. | High-pressure cylinder; 3 x 3½ bore and stroke; 20 horsepower.. | Low-pressure cylinder, 5 x 3½ bore and stroke.. | "Flash" Generator..... | Shaft drive..... | 104-in. wheelbase..... | | Goodrich |
| | | | | | | | Diamond |
| | | | | | | | Diamond |



TOM FETCH'S PACKARD AT THE APEX OF ONE OF THE PENNSYLVANIA MOUNTAINS, WHERE THE SCENERY THAT GREETED THE A. A. A. TOURIST WAS WILD AND PICTURESQUE.

DEDUCTIONS OF THE TOUR THAT ARE SELF APPARENT

By F. B. HOWER, CHAIRMAN TOURING BOARD.

It must be one thing or the other—an endurance contest or a pleasure tour. The pleasure journey is no longer of any special value to manufacturer or user, and therefore it is my opinion that the 1908 event of the A. A. A. should be a prolonged endurance run, with every entrant providing a "scrutineer" or observer, who of course would ride only in the cars of other entrants for obvious reasons.

Each time the "scrutineer" took his place in a car he would be handed the list of extra parts carried, and at the conclusion of the day's run the results of his observations would become a part of the official records.

In touring nowadays a disabled car can often reach a garage or machine or blacksmith shop and accomplish sufficient repairs to continue to the end of the journey, but for using parts not carried, I repeat, there should be at least a five-fold penalty.

The purpose of a strenuous test is to enable the maker to correct the structural weaknesses in his car, and he can discover

these defects only by subjecting his product to extraordinary conditions. If his car has a fault he should be the first one desiring to find it out. It is safe to say that much has been learned by all the makers who participated in the run just ended. We asked far more of the cars than they might ever be called upon to perform, but I believe that in automobiles, like in other construction, there should be ability to withstand several times what may be met with in ordinary usage.

It is self-apparent that an endurance tour or any contest of this character should be conducted by a disinterested body rather than by the makers. The public naturally will look upon the event with greater favor under such circumstances, as it naturally stands to reason that the report of the results of such a test will be received as emanating from a source wholly untainted with the slightest suspicion of trade bias and, in consequence, be considered as authoritative and as having far more weight than they possibly could otherwise.

DEPLORABLE CONDITIONS OF AMERICAN HIGHWAYS

By CHARLES J. GLIDDEN.

THE fourth annual tour of the American Automobile Association was witnessed by more people and created a greater interest than any event of its kind ever held in this country or any other. It has shown to the world the reliability of the American cars, the skill of the drivers, and revealed the deplorable condition of the highways of a prosperous nation.

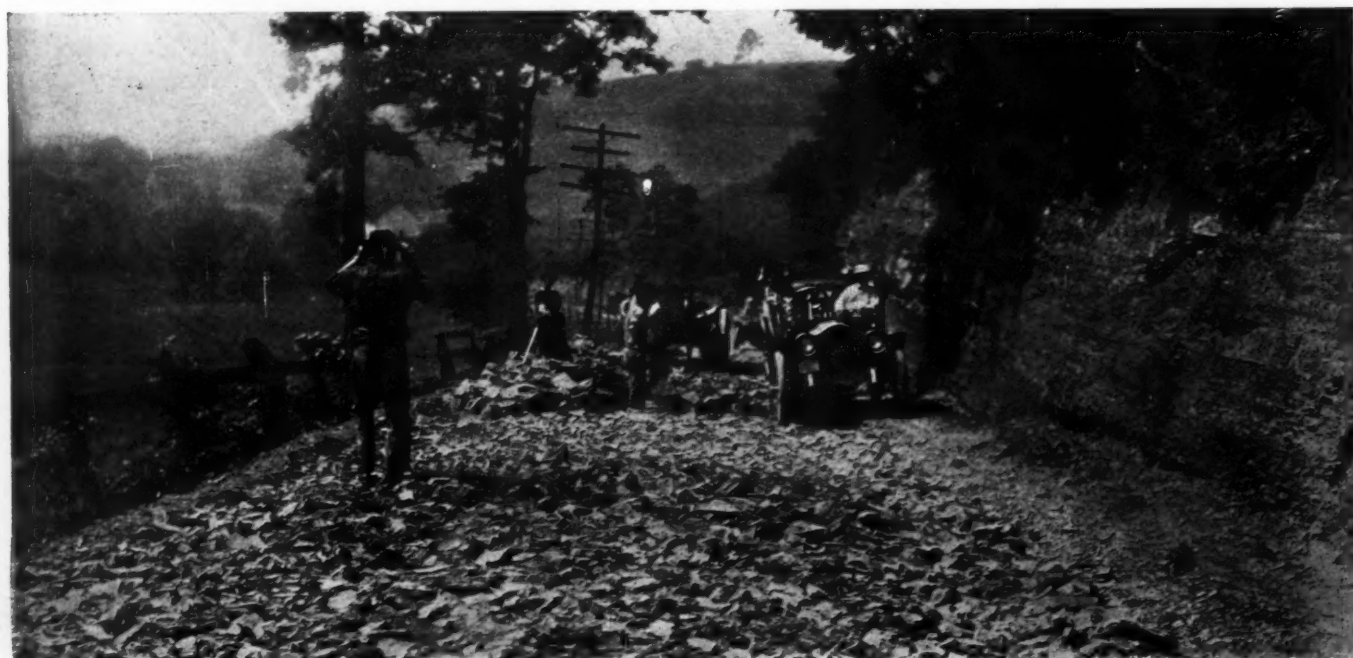
Seventy per cent. of the roads would, by any European government, be closed to public travel and marked "use at your peril." The serious accidents were due wholly to the condition of the roads which were unknown to the drivers.

The contest for the Glidden Trophy by clubs has removed any possibility of a tie and increased the popularity of the tour. That far the Hower Trophy for high-powered runabouts

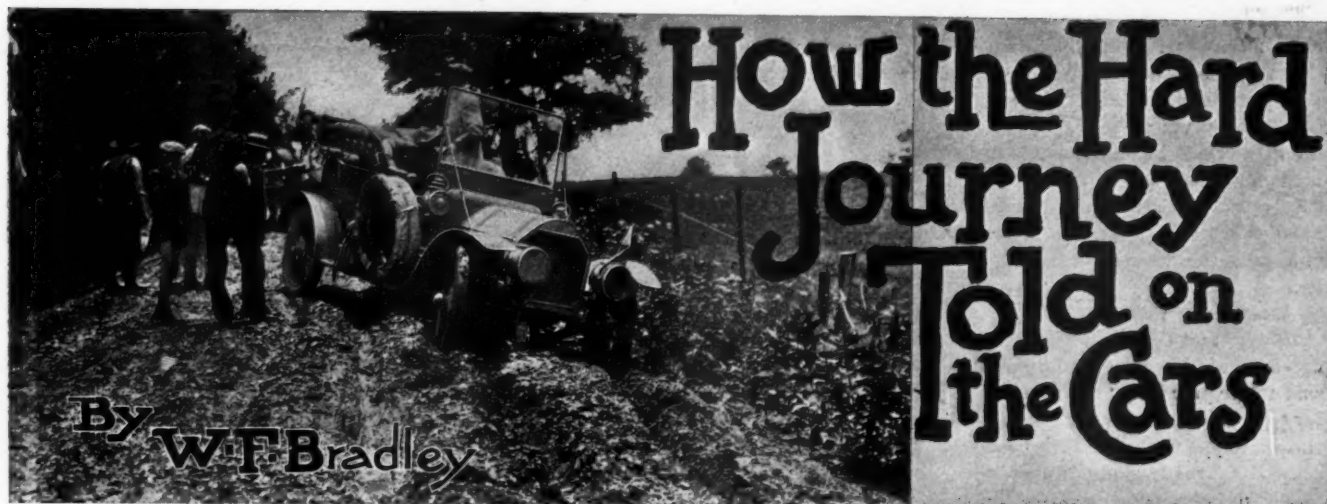
has brought into prominence a superior class of vehicles for touring by use of which economical drives can be made for long distances when it is not the wish of the owner to carry a large party, or a great deal of touring impediments.

The tour has been ably managed by the Touring Board, through its efficient chairman, F. B. Hower, and the foundation has been laid for future events in which a large majority of the clubs in the United States will participate and every prominent manufacturer be represented.

The contest is open to the world, and it would be interesting to know the record of foreign manufactured cars on American roads in a test of this character, as, outside of the wilds of Russia, Europe offers no such testing ground as this.



THIS IS A FAIR SAMPLE OF SOME OF THE "GOING" ENCOUNTERED BETWEEN CANTON, OHIO, AND PITTSBURGH, PA.



How the Hard Journey Told on the Cars

By W.F. Bradley

ROADS THAT WERE SUCH ONLY IN NAME TESTED CARS AND TRIED THE DRIVERS' SKILL.

AFTER twelve days' touring over roads as varied as possible for highways to be—the variety being not merely a matter of road surface but also of changing geographical conditions, it is an easy task to sum up with a considerable amount of accuracy the mechanical features developed by the A. A. A. tour.

A mere numerical declaration of the automobiles which left Cleveland on July 10 and of those which have survived to the end of the journey might cause the superficial observer to be unfavorably impressed with the value of the automobile as a touring machine. Of those having covered the 1,570-mile journey a certain number are incapable of further effort without a thorough overhauling, involving quite a stay in the shop.

Not more than thirty-five machines out of over seventy starters have reached New York in perfect condition, ready to go forth to further exploits without repairs or adjustment. The elimination of over 50 per cent. of the competitors on a twelve days' running schedule may lead critics to condemn the machines as unsuited for the work they are built to accomplish, and might cause prospective automobilists to hesitate in face of such an expensive pastime. Nearly 1,600 miles and 50 per cent. of the machines candidates for the hospital, the layman might muse, and decide to wait for the perfect automobile. But if the true conditions of the tour are understood, such a result will be considered as thoroughly satisfactory. The party toured—but not as ordinary mortals tour, for the average man does not perform herculean feats when he wanders round the country in an automobile or subject his car to maximum tests. Road conditions on the A. A. A. tour were such as are to be found in no other country in the world, and the daily stages and running times called for strains which no sane private owner would impose upon himself or his car. Briefly, a year's ordinary wear is compressed into a fortnight; to survive the fourteen days more than commonplace mechanical construction is required. A few who entered the run—and many who stayed out—were under the impression that the tour was a series of daily journeys under normal touring conditions. Those who have gone through the affair in any capacity know the enormity of their mistake.

Throughout the tour there has been a remarkable immunity from engine troubles. The run could certainly not have been made under sealed bonnet conditions, but there has been less tinkering under the hood than in any other competition of a like nature. One car cracked a cylinder, one retired with a broken connecting rod, another had serious magneto troubles, and there were various cases of broken valve springs, fan troubles, short-circuits, carburetor adjustments, and the like. On the whole, however, the power plants gave full satisfaction. With such heavy going as was met with on the outward run to Chicago and the strenuous hill climbing in Pennsylvania, where the engine was called upon to furnish its maximum power for several hours in

succession, the performance of the motors is thoroughly satisfactory. Leaky radiators were only small in number, and with few exceptions were the result of collisions and blows which would not have been met with under ordinary conditions. Very few motors showed signs of overheating, and more than one car traveled over the mountain stages from Canton to Baltimore without pouring a drop of water into the radiator. Such a performance speaks volumes for the efficiency of the engine.

The weak point of the machines was in their transmission and drive. Clutch, gears, shaft, differential and rear axles in some cases developed weaknesses of such a nature as to put machines out of the competition. One car abandoned with a broken clutch, five at least stripped their gears, and about half a dozen had broken or damaged rear axles. In three cases a broken truss rod was observed, two of which led to the rupture of the rear-axle housing and the total disablement of the car. A few others suffered so severely in this respect that, though they reached New York, their rear axle will have to be dismantled and entirely overhauled. Traveling over such rough roads as the Toledo-South Bend stage, the fast Canton-Pittsburg run, or the heavy pulling over the Alleghenies into Bedford Springs imposed enormous strains, as several makers of lightweight and poorly constructed rear axles found to their cost. On good roads, with minimum loads, the cars might have given years of satisfactory service, but when four passengers and heavy baggage had to be transported over bad roads at a rapid rate the driving mechanism broke down immediately.

Chassis suspension was discovered to be insufficient in a number of contesting and accompanying cars. Several drivers, anticipating trouble of this nature, carried spare springs with them, and had occasion to use them before the end of the trip. More trouble was experienced with front than with rear springs, three machines breaking both front springs and several suffering from one spring more or less seriously broken. Spring irons and rubber bumpers had frequently to be added on the way. When Chicago was reached some of those who had left home without shock absorbers decided that their presence would be useful, and forthwith fitted them to their cars. Few, apart from the perfect-score contestants, had perfect suspension, sufficient to give easy riding to the occupants of the car or immunity from breakage. Frequently the springs might have been lengthened and strengthened with advantage, and an efficient shock absorber added in front at least. Some of the most pleasing machines in this respect had springs of more than ordinary length for their seating capacity, and were fitted with a complete set of shock absorbers. A couple of cases were reported where the shock absorbers themselves were incapable of performing their work, one of them breaking away from the frame repeatedly. Corded springs were noted in a few cases, and one non-contestant im-

provided a set of rubber bumps out of a section of solid tire. Before checking in at the controls a number of drivers wisely paid close attention to the lubrication of their springs.

A very severe and at the same time unnecessary strain was imposed on the springs by the presence of water breakers, for there is no reason whatever why these should be allowed to remain on the highways. From Pittsburg to Bedford they were rather more annoying than dangerous, for, owing to the bad surface, cars rarely took the bumps at a rapid rate. From Bedford to Baltimore the breakers were a constant danger, for, with a car running over the good macadam from twenty-five to thirty miles an hour, it was impossible to slow for every bump, and the strain on the springs was enormous.

Friday, and especially Saturday, were "fierce days on brakes," as some of the drivers appropriately put it. Not that any car was totally inefficient in its braking system or suffered any injury through their failure to act, but on the whole they were shown to be not sufficiently powerful for continuous mountain work. As road conditions improve and mountain touring becomes more general, greater braking surface and more easy methods of regulating the brake bands will have to be adopted. No water-cooled brakes were observed, this practice, a common one on European machines built for mountain work, not having yet been adopted by American constructors. A few cars were obliged to stop to cool off their brake bands as a precautionary measure, and all those who had time to do it overhauled their brakes before checking in at South Bend. One non-contestant declared that he spent all Sunday putting his brakes into shape for the following day.

Steering gear gave very little trouble, there being but one case of a breakage under ordinary running and three disablements of greater or less gravity by collision with road objects. One machine had a stout hickory bar attached to the connecting rod, the driver declaring that it not only minimized the danger through a breakage of the connecting bar, but absorbed a certain amount of vibration.

Users of speedometers, and they comprised nearly every participant in the tour, declared that, although the instrument rarely became disabled, the fixtures were not sufficiently robust to stand the hard going. Several of the brackets broke. Some drivers, anticipating such a trouble, had two instruments, so that if one went out of business they were not obliged to run by guesswork.



COLUMBIA ON ONE OF THE MANY HEARTBREAKING STRETCHES OF ALLEGED ROAD.

SEEN BY THE UBIQUITOUS SNAPSHOTTER.

By F. ED. SPOONER

One blacksmith at a point somewhere between Ligonier and Pittsburg will have reason to remember a hard ride in a Packard car. Wallie Owen had driven hard when he met with an accident and the Packard, belonging to a Pittsburg gentleman bound for Bedford, came along. Owen was offered assistance and at once started for the nearest mountain village to get a job done in blacksmithing. He carried back with him the smithy and carried him so fast over the water breaks that none of the occupants of the car ever found a chance to see whether the cushions were easy. In very fact, they were far above the seat the greater portion of the time. Owen repaired the break and forty miles later on it gave out. He went out Sunday and came in among the cheers of the contestants.

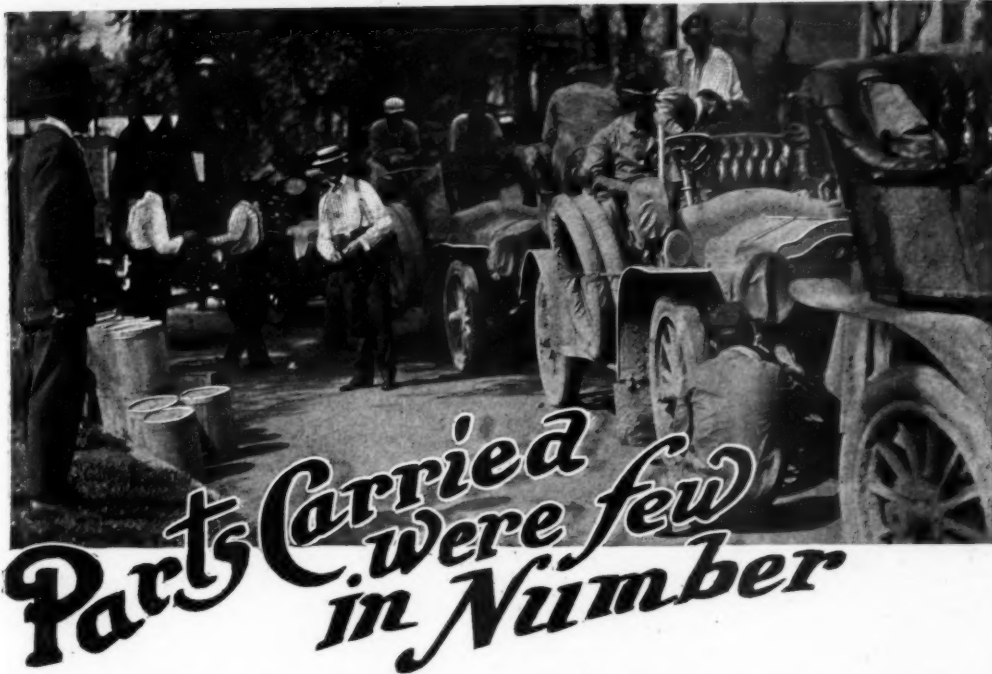
Sunburn was a serious matter with the contestants this year. At no other time did the sun cause like trouble. Faces became red, then started to swell and the face changed its appearance so that many could not be recognized. George M. Davis of the E. R. Thomas Motor Co. and many others suffered from sunburning and were in the hands of the doctors. The malady took on a serious aspect and caused untold agony in some instances. The doctors could not explain it, some explaining that bugs caused it and others that erysipelas developed. Whatever the cause, the beauty of many a man disappeared.

The neatest and best arranged reception along the route was at the old Firestone Homestead near Columbiana. Here the tourists were presented with a handsome basket filled with lunch. Every basket contained boxes of sandwiches, cigars of the finest kind and stone bottles of delicious milk. The ladies received handsome bouquets. The Messrs. Firestone, with their wives and many visiting ladies, presided over a tent filled with good things.

The reception to the tourists at Kokomo, where the Apperson Brothers presented lunches and small bottles and the Haynes Automobile Company supplied lunches from a patrol wagon which met the cars on the road, was appreciated by the tourists. The route was altered to take the tour past the Haynes factory, America's first automobile factory. This was done because Sales Manager Fanning made the request.

When the tourists stopped at Dayton at the big factory of the Dayton Motor Car Company, they were presented with lunches, were not allowed to pay for their gasoline and received a reception which warmed the cockles of the heart. The city turned out en masse and gave the visitors a royal reception. Sales Manager Jamison and Mr. Stoddard attended to all wants.

Mrs. Cuneo wore bands around her arms to strengthen the wrists and at Bedford Springs had amulets which drew much attention. The arms burned below and above the wrist bands and burned badly. Many commented on the fact and scores asked questions. The extent of the effects of the sun were plainly visible on Mrs. Cuneo's wrists.



IN contrast to previous A. A. A. tours, every competitor in this year's event was called upon to carry all the parts he considered necessary for the trip, and to obtain no parts from outside sources. During the stay at Bedford Springs, all competing cars were examined in order to verify the spares carried. Discrepancies between the manufacturers' list and the actual parts carried were discovered on certain machines, in some cases the parts being in excess of the list and in others parts being missing which, according to the list, should have been on the car. In all cases it appeared evident that the non-conformity between the list and the parts was due to hurried packing on the part of the manufacturer or to negligence of the drivers to verify the materials received.

As an official admission of the parts which, in the estimation of the manufacturer, might need replacing on the journey, the complete inventory holds considerable interest for those who are closely following the tour.

OFFICIAL LIST OF EXTRA PARTS CARRIED.

Car No. 1—N. H. Van Sicklen—Apperson: Four roller bearings, 12 spark plugs, 1 commutator chain, 1 fan belt, 1 oiler belt.

Car No. 2—K. R. Otis—Pierce Great Arrow: No extra parts.

Car No. 3—R. D. Garden—Pierce Great Arrow: Four spark plugs, 1 carburetor float, 1 carburetor air valve complete, 1 unit coil.

Car No. 4—H. A. Grant—Maxwell (non-contestant).

Car No. 5—A. L. Kull—Dragon (non-starter).

Car No. 6—T. J. Clark—Packard: One 714 hand brake ring, 1 796 clutch band assembly, 1 1715 front spring, 1 647 foot-brake band shoe F.W., 1 647 1-4 foot-brake band shoe R.L., 1 647 1-2 foot-brake band shoe R.W., 1 647 3-8 foot-brake band shoe F.L., 1 647 5-8 foot-brake band shoe (interm.), 2 1692 spark plugs.

Car No. 7—A. R. Welch—Welch: One fan belt, 1 commutator complete, 1 pair valve arms, 1 exhaust valve complete, 4 spark plugs, 1 set brake lining and rivets, 2 spring clips and rivets, 1 bumper saddle and strap.

Car No. 8—Chas. E. Finlay—Pierce Great Arrow (non-starter).

Car No. 9—George S. Salzmann—Thomas Flyer: No extra parts.

Car No. 10—F. J. Pardee—American Mors: One front spring, 1 rear side spring, 3 gasoline pipes, 4 never-skip spark plugs, 1 406 ball bearing, 1 508 ball bearing, 1 307 ball bearing, 1 309 ball bearing, 1 Whitney chain, 3 intake springs, 6 spark plugs, 3 exhaust springs, 2 valves, 4 nuts, 1 magneto, 2 magneto grease cups, 1 magneto gear, 1 magneto disk, 12 valve washers, 4 bolts.

Car No. 11—Montgomery Hallowell—Thomas Flyer: No extra parts.

Car No. 12—R. D. Chapin—Thomas Flyer: Two valves, 3 valve spring spools, 3 spring clips, 3 commutator wires, 3 universal joint bushings, 1 right front steering knuckle, 1 steering ball joint, 3 post springs, 1 spring repair, 1 spring clip bolt, 2 rocker arms, 1 front wheel inside bearing, 1 front spring bolt, 1 steering gear ball arm, 3 pet cocks, 1 commutator roller, 1 vibrator spring, 1 vibrator screw, 1 commutator contact, 1 carburetor spring.

Car No. 13—Geo. M. Davis—Thomas Flyer (non-contestant).

Car No. 14—Phillip S. Flinn—Pierce Great Arrow: Four spark plugs.

Car No. 15—C. G. Cabanne—American Mors: One front spring, 1 rear side spring, 2 prs. Weed chains, 1 magneto, 4 valve springs, 4

never-skip spark plugs, 1 H. B. bearing, 1 H. B. bearing, 1 H. B. bearing, 1 Whitney chain, 4 spark plugs, 4 ignition hammers, 2 grease cups, 8 bus-bar bushings, 8 bus-bar nuts, 4 valves, 6 ignition springs, 4 gasoline pipes, 1 box extra parts.

Car No. 16—Orrel A. Parker—Royal Tourist: No extra parts.

Car No. 17—F. S. Dey—Pierce Great Arrow: No extra parts.

Car No. 18—H. Paulman—Pierce Great Arrow: Non-starter.

Car No. 19—G. S. Weldely—Premier: One spark coil unit, 1 set universal joint bushings, 1 outside front wheel cone, 1 inside front wheel cone, 1 storage battery.

Car No. 20—John Kane Mills—Dragon: Non-starter.

Car No. 21—Thos. P. Jones—Pierce Great Arrow: No extra parts.

Car No. 22—H. H. Perkins—Packard: Four spark plugs.

Car No. 23—H. C. Shoemaker—Shoemaker: One emergency spring repairer, 1-2 doz. cap screws, 1-2 doz. cap screws, 1-2 doz. cap screws, 1-2 doz. cap screws, 4 spark plugs, 1-6 doz. grease cups, 1 fan belt, 2 spring bolts, 4 flat keys, 1 pr. tire grips, 1 clutch shifting finger, 2 clutch springs, 1 center plate for universal joint, 1 universal joint pin, 1 doz. assorted taper pins, 1 valve, 1 push rod and 1

roller and pin, 1 bearing, 1 brakeband, 1 cardan shaft.

Car No. 24—W. M. Lewis—Mitchell: One carburetor, 1 commutator, 1 unit Splittorf coil, 1 pump coupling, 1 cardan shaft with universal joint, 4 grease cups for cardan shaft, 4 bushings for cardan shaft, 1 torsion rod block with rivet, 2 turn-buckles for rimbeads, 2 mushroom push rods, 2 oiler belts, 12 assorted split cotter, 12 assorted taper pins, 6 assorted cap screws with nuts, 12 assorted rivets.

Car No. 25—Sid Black—Lozier: Two drive chains, 1 front spring, 2 clutch springs, 1 air valve, 1 spark coil, 1 doz. spark plugs, 2 oiler belts, 2 fan belts, 1 complete set wheel bearings.

Car No. 26—Mrs. A. Cuneo—Rainier: One contact plug, 4 complete ignition plugs, 2 valve cocks, 1 front inside wheel cone, 1 inside front wheel ball roll, 1 outside front wheel cone, 1 outside ball roll, 1 outside rear wheel ball roll, 1 inside rear wheel ball roll, 1 inside rear wheel cone, 4 hose clamps, 1 front hub cap, 1 rear hub cap, 1 front spring, 1 rear spring, 4 spring clips, 5 lock nuts (front wheel), 4 lock nuts (rear wheel), 1 wire for magneto, 3 hose connections, 2 valves, 1 right knuckle, 1 left knuckle, 2 oiler chains, 1 steering drag rod, 1 pair oiler sprockets, 1 spring for stud, 1 rear hub lock and nut, 1 torsion rod spring, 5 sets of hammer igniters of 3 pieces each.

Car No. 27—A. Kumpf—Pierce Great Arrow: No extra parts.

Car No. 28—Paul Gaeth—Gaeth car: One oiler belt, 1 fan belt, 2 valves, 1 pinion shaft (ball race), 1 pinion shaft (cone), 1 set pinion shaft balls, 2 front wheel cones, 2 front wheel ball races, 1 set front wheel balls, 2 rear wheel cones, 2 rear wheel ball races, 1 set rear wheel balls, 1 front spring.

Car No. 29—G. P. Moore—Welch car: One fan belt, commutator complete, 1 pr. valve arms, 1 exhaust valve complete, 4 spark plugs, spring mender, set brake lining and rivets, 2 spring clips and rivets, 1 bumper saddle and strap.

Car No. 30—H. M. Coale—Autocar: Inlet valve cover, inlet valve cover, inlet valve assembly, exhaust valve assembly, rear axle, 2 oiler belts, clutch spring, 2 T roller bearings, 6 spark plugs, 1 fan belt, 2 inlet valve springs.

Car No. 31—E. S. Lea—Walter: One brake band complete, 1 set foot brake connections, 2 complete hub connecting rods, 3 spring clips, 1 valve case, 1 valve nut, 1 exhaust lifter complete, 1 inlet lifter complete, 1 hub cap, 1 belt for brake band, 3 rubber connections, 1 set of brass bushings for driving shaft, 1 box of assorted bolts and nuts, 16 spark plugs, 30 gaskets, 2 oil pipes, 1 rubber bumper, 1 lot of wire, 1 set of spiral springs, 1 complete rocker arm, 1 clutch collar, 2 extra valves, 2 coil units, 2 thrust washers, 2 fan belts, 1 Universal cross, 1 timer, 4 valve cap washers.

Car No. 32—W. J. Howard—Oldsmobile "A": No extra parts.

Car No. 33—R. M. Owen—Reo: Oiler pipe, auto jack, hammer, master links extra, 1 chain, transmission brake band, ball end, distance rod end, push rod, 1 valve, rear wheel key, rear wheel pin, high speed cone, filler plug, carburetor oil, shut-off for gasoline, box friction tape, 2 bolts for hood to dash, 2 high-speed dogs, clamping screw high-speed spider, starting ratchet and pin.

Car No. 34—R. L. Lockwood—Reo: Extra parts same as No. 33.

Car No. 35—Geo. L. Lyon—Reo: Extra parts same as No. 33.

Car No. 36—E. B. Finch—Pungs-Finch: Two valve stems, 2 fan spindles, 1 pump, transmission shaft, brake band.

Car No. 37—A. L. Peterson—Meteor: Three springs, 2 valves, 2 spring clips.

Car No. 38—H. C. Tillottson—Stoddard-Dayton: Leather valve for carburetor, 2 front wheel bearings, 2 rear wheel bearings, 8 wheel lock washers, coil unit, 2 valve caps, 1 push rod adjust screws, fan belt, carburetor, 2 spark plugs.

Car No. 39—Arthur N. Jervis—Berliet: Four spark plugs, ignition rod, 4 igniter contact levers, 7 igniter outside levers, 8 ignition lever springs, 2 igniter plate gaskets.

Car No. 40—R. H. Johnston—White: Non-contestant.

Car No. 41—I. C. Kirkham—Maxwell: Front spring, rear spring, inside ball race, outside ball race, steering knuckle (right), steering

knuckle (left), 2 valves, drive pinion shaft yoke, drive shaft yoke, 2 yoke pins, inlet spring, exhaust spring, drive pinion grease cup, 2 commutator arms complete, 2 spark plugs.

Car No. 42—R. H. Tucker—Royal Tourist: No extra parts.

Car No. 43—J. W. Mears—Acme car: Two sprocket shafts, 2 compensating shafts, 2 con. rod brasses, 1 steering knuckle, 1 steering knuckle arm, 1 driving chain, 2 emergency brake bands, 1 magneto switch, 1 magneto circuit breaker, clutch spring, 2 sets T wheel bearings, 1 complete set of gear shafts and bearing transmissions.

Car No. 44—Gus G. Buse—Packard: Six spark plugs, 4 valve stem keys, 2 valve springs, magneto chain, magneto carbon, spring clip, universal joint cover, governor diaphragm cover (rubber), governor diaphragm cover (leather), 1 foot hose for water line.

Car No. 45—A. M. Robbins—Aerocar: One valve spring, 12 spark plugs.

Car No. 46—Geo. F. Barr—Aerocar: Two valve springs, 12 spark plugs.

Car No. 47—Walter C. White—White: No extra parts.

Car No. 48—A. J. Scafe—White: No extra parts.

Car No. 49—Chas. H. Burman—Peerless: Two spark plugs, pr. external brakes, 2 universal couplings, live driving shaft, rear wheel clutch plate, 2 spring clips and 5 spring bolts, rear hub cap, air valve, 5 fan belts, 6 R.B.F. annular ball bearings, 4 brake rods, brace for crankcase, 2 water jacket gaskets, 3 pieces 1x1-4 inch hose, inside rear hub, outside rear hub, front drive pinion, rear drive pinion, differential, differential.

Car No. 50—W. C. Straub—Peerless: Pr. external brakes, 2 universal couplings, live drive shaft, rear wheel clutch plate, 2 spring clips and five bolts, rear hub cap, air valve, 2 Timken roller bearings, 6 R.B.F. ball bearings (inside, outside, thrust drive, rear drive, differential, differential), 4 brake rods, 3 water hose connections, 2 spark plugs.

Car No. 51—J. H. Becker—Elmore: Two steering knuckles, 4 cones, 6 ball bearings, 1 bypass screen, 4 cylinder rings, timer, timer clamp, coil unit, 2 trans. brake shoes, 4 universal joint bushings, emergency brake lever dog, 2 Sager equalizing springs.

Car No. 52—Wm. G. Houck—Deere: Two valves, 2 valve springs, 8 spark plugs.

Car No. 53—Deere-Clark Motor Car Co.—Deere: Non-starter.

Car No. 54—Edward Noble—Haynes: Two valve springs, 2 universal joint pins, 3 fan belts, 2 oil pump valves, 2 roller bearings, grease cup, 2 spark plugs, 2 spring shackles, carbureter air valve, 2 rollers for pinion, 4 valve plug washers.

Car No. 55—F. N. Nutt—Haynes: One valve, 2 fan belts, 3 valve springs, 2 oil pump valves, roller bearing complete for front wheel, 1 grease cup, 4 spark plugs, 6 valve plug gaskets, carbureter air valve, 2 rollers for pinion, 2 universal joint pins, 2 spring shackle bolts.

Car No. 56—F. E. Dayton—Columbia: No extra parts.

Car No. 57—A. D. Cressler—Thomas Flyer: Non-contestant; from Chicago to Indianapolis only.

Car No. 58—Lucius S. Tyler—Maxwell: Front springs, rear springs, 6 spark plugs, set external brake sheaves, universal yokes, 2 universal yoke pins, inside ball race, outside ball race, dust ring, felt washer for dust ring, 2 inside cones, 2 outside cones, valve, fan belt, 2 inlet valve springs, 1 exhaust valve spring, 2 spring clips, pr. commutator arms complete with spring.

Car No. 59—Chas. A. Fleming—Maxwell: Front spring, rear spring, drive pinion support, 2 sets brake shoes, right steering knuckle and left, fan belt, spark coil units (2), 14 spark plugs, 2 grease cups, 2 inside ball races, 2 outside ball races, 2 pet cocks, 2 spring

clips, grease cup cover, drive yoke, universal yoke pin, 4 inside front wheel cones, 4 outside front wheel cones, 4 valve springs.

Car No. 60—Wm. Turner—Thomas Flyer: Non-contestant.

Car No. 61—H. G. Smith—White: Non-contestant.

Car No. 100—A. E. Hughes—Pierce Runabout: Carbureter air valve, carbureter air valve spool, carbureter air valve spool nut, carbureter air valve spring, seat air valve, 2 interior brake shoe springs, fan belt.

Car No. 101—C. A. Coey—Thomas Flyer: Non-starter.

Car No. 102—H. E. Coffin—Thomas Flyer: Two valves, valve spring, 4 universal joint bushings, 3 clutch toe springs 3 spring clips, 2 commutator wires, 2 coil adjusting screws, left front spindle, valve stem spools (2), 2 rocker arms, inside front wheel bearing, front spring bolt, spring clip bolt, 3 compression relief cocks, 1 pet cock (brass).

Car No. 103—H. O. Smith—Premier: One spark coil unit, set universal joint bushings, outside front wheel cones, inside front wheel cone, storage battery.

Car No. 104—G. S. Smith—Stoddard-Dayton: Leather valve for carbureter, front wheel bearing, rear wheel bearing, 8 lock washers, 1 coil unit, 2 valve caps, push rod adjusting screw, fan belt, carbureter, 2 spark plugs, driving pinion.

Car No. 105—J. C. Zimmerman—Locomotive: Non-contestant.

Car No. 106—R. G. Kelsey—Matheson: Two extra spring shackles, 1 ignition plug hammer, 1 ignition plug anvil, 2 rocker arms, 4 plug gaskets, 1 set (2) Timken roller bearings.

Car No. 107—Harry G. Stutz—Marion: One pin and shaft, 1 transmission shaft assembled, 1 right hand front knuckle, 1 left hand front knuckle, 1 coil unit, 4 spark plugs, 1 Schebler carbureter, 1 Herz timer.

Car No. 108—H. K. Sheridan—White: No extra parts.

Car No. 109—C. S. Johnston—Continental: Two extra springs, 2 spring clips, 2 shackles, leather belting, 1/2 doz. assorted bolts, 4 spark plugs, 3 pet cocks, lot of assorted bolts, starting crank handle, 2 brake bands.

Car No. 110—A. B. Tucker—Dragon: Non-starter.

Car No. 111—W. Owen—Pennsylvania: Three valves, 1 coil, 1 carbureter, 6 spark plugs, roller bearings for two wheels.

Car No. 112—J. W. Haynes—Dragon: Two fan belts, 2 valves, 2 springs, 2 spring cups, 2 spring cup keys, 1 commutator, 1 clutch, leather and rivets, 1 set Timken bearings complete, 1 oiler gear on shaft, 1 fiber oiler gear, 2 full sets gaskets for engine, 4 spark plugs, 2 rollers for clutch shaft, 2 roller pins for clutch shaft, 4 Hyatt roller bearings, 2 thrust bearings, 1 propeller shaft bearing (long), 1 propeller shaft bearing (small), 1 box assorted cotter keys and taper pins, 1 box lock and flat washers assorted, 1 box assorted bolts, nuts, machine bolts and studs, 3 feet hose, 2 connecting rod bearings, 1 piston pin, 1 piston pin bushing, 4 vibration springs for coils, 4 contact points for coils.

Car No. 113—H. P. Branstetter—Dragon: Same list of extra parts as for car 112.

Car No. 114—James G. Barclay—Thomas: Two valves, 3 valve-spring spools, 3 spring clips, 3 com. wires, 3 universal joint bushings, 1 right front steering knuckle, 1 steering ball joint, 3 toe-springs, 1 spring repair, 1 spring clip bolt, 2 rocker arms, 1 front wheel inside bearing, 1 front spring bolt, 1 steering gear ball arm, 3 pet cocks, 1 commutator roller, 1 vibrator spring, 1 vibrator screw, 1 commutator contact, 1 carbureter spring, 1 main shaft for trans., 1 trans. yoke.

Car No. 115—Wm. Badger—Cleveland: One front spring, 1 set ignition parts.

SEEN AND HEARD ALONG THE ROUTE.

ONE fact is self-evident—there's always a grumble on conditions for contests of any sort. The New Jersey Automobile and Motor Club's 600-mile run, the Long Island Automobile Club's three-day run, the Automobile Club of America's 600-mile sealed-bonnet contest, all were far too easy to be a real test of cars, and the New York Motor Club contest was simply a rank failure because it was too hard, and cars could not be expected to make perfect scores. The Fourth Annual of the American Automobile Association was harder than last year. It was a real test of cars and drivers, but according to some it was too hard, these "some" being in the contest, while to many who did not enter it was not hard enough to try out cars. "Too hard" said one, "Too easy" said another, and all have advice to offer as to how a tour should be run, while few will ever take the time to draw up their conclusions and put them in writing, so that committees may consider them.

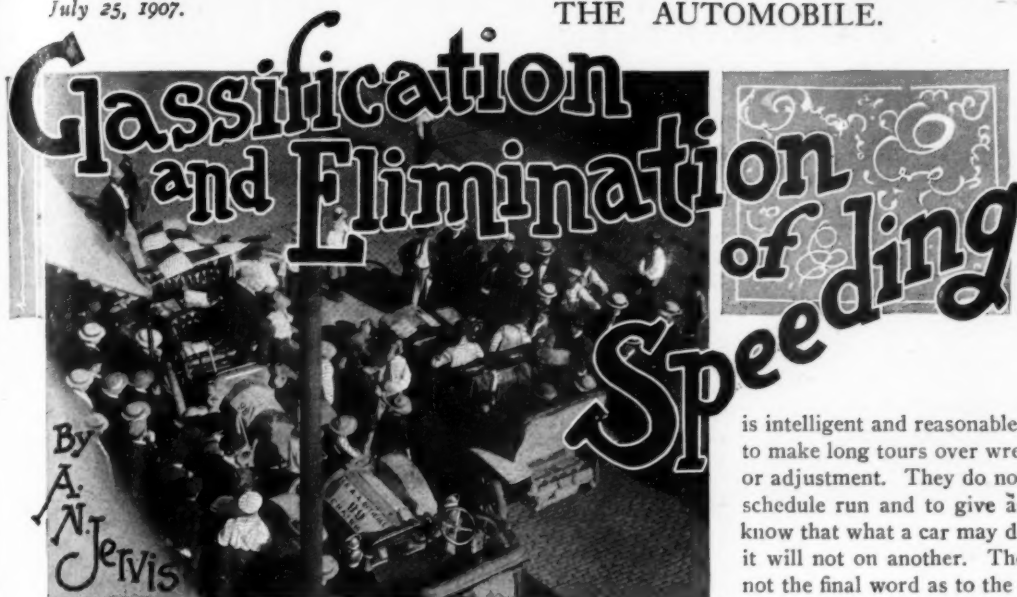
Stone throwing and like troubles nearly caused accidents. Spectators who watched the tour pass seemed to think that the tourists were immune from trouble. Notes wrapped with a stone in paper were pitched into the cars by young girls, and boys threw stones in mischief and without thoughts of danger to the contestants. In one instance a woman threw a wet dish cloth and apples were thrown by kindly minded persons. These pres-

ents and missiles, for they were such in many instances, caused untold agony when they struck the tourists, and in several instances came very near causing trouble through striking the driver.

Since the trip of the Greater Arrow in pathfinding, the roads from Pittsburg to Ligonier had been so improved that time was made in the first half of the Pittsburg to Bedford Springs journey, which allowed a leeway of hours for the latter half of the trip. The eight and one-half hour schedule was considered far too fast when made, but proved an hour too slow for an average on the time made by the cars.

In front of the Auditorium Annex two negroes passing stopped to look and one said to the other: "None but millionaires ride in automobiles." Some of the tourists rather swelled at that, including some newspaper men, and backs became straight, while some felt of their pocketbooks and wondered where the million was going to be found.

The officials required four people in every touring car, but some did not have four all the time, as the water breaks kept at least two in the air most of the time. A few learned to ride the bumps safely by standing, but others took their innings and became rubber balls.



NEXT in emphatic persistence to the impression of the utter crudeness of American roads is that of the wonderful stage of efficiency and reliability to which the automobile has been brought, that it should pound and bounce over them or plow through them day after day for thousands of miles.

The locomotive, on its costly special roadbed and steel guiding rails, is driven along, nursed and cared for constantly by an engineer who knows the machine as a mother does her child, and under all these favoring circumstances the locomotive is not required to go out day after day. It is given a run of 100 miles one day and given a rest the next, being thus relayed all the time. Something in the neighborhood of fourteen locomotives are used to haul the fast trains between New York and Chicago. Yet the lighter and more delicate engine machinery of the automobile is taken out on the trackless trails called roads and bumped along day after day and expected to keep in good running condition without even being cleaned up and attended to over night.

Simply because men demanded it, some cars have been built that will do this, and now it is exacted of them all. It is unreasonable, but competition in the open market compels, and therefore, as an advertisement of the touring qualities of their cars, nothing can be better for the makers than one of these competitive tours if it is sensibly, ably and equitably conducted.

The Old Tale of the Survival of the Fittest.

What the public wants to know about the cars is how much trouble and expense they involve on a long tour. Those who buy cars or are contemplating purchases are entitled to this information when a competitive tour is arranged by a non-commercial organization, of which they are members, such as the A. A. A. What the tour reveals regarding the various cars should be given to the public honestly. There is everything to gain in this. Actions speak louder than words and the performance of a car in a well-regulated touring contest will go further toward establishing a lasting reputation than unlimited shouting and reams of printed argument. The good will stand and the flimsy will fall, and this is what every honest manufacturer wants—to stand or fall on the merits of his product and to see the fit survive while the weak are exterminated. This is certain to happen, whether contests which bring out the weaknesses are run or not, for in no industrial manufacture does the law of fittest survival apply more rigidly. It is fair to assume that every maker is striving to meet the competitive conditions and produce a car that for efficiency and reliability is worth its price, whatever that price is. Those who expect to continue in business must do this. In no other line is it such arrant business folly to build a clap trap article to sell quickly. The maker of such a product in automobiles can have but a very short career. Considering these points, why should not all be willing to see competitive tours run on the

strictest basis of honesty and frankness, without any advertising faking whatever? It is acknowledged that the manufacturers have much to learn before cars will be perfect. They benefit by the instruction, as well as the buying public. It does not spell ruin to have derangements and breakages occur while cars are being put through a strenuous run. That portion of the public which buys automobiles

is intelligent and reasonable in the main. They do not expect a car to make long tours over wretched roads without any care or repair or adjustment. They do not expect an \$800 car to make as good a schedule run and to give as little trouble as an \$8,000 car. They know that what a car may do, or fail to do, on one day or one tour, it will not on another. They know that the record of one trip is not the final word as to the merits of a car. It is probable they are less fooled by the misleading reports given out than is supposed. They are too reasonable to suppose that the \$800 car is equal in all ways to the \$8,000 car, just because the rules of some contest permits both to make a perfect score. They do not expect a watch, or a bicycle, a horse and carriage, or a kitchen range to work without regulation and repair, neither do they expect to get as good a diamond for \$50 as for \$500, although they know that a genuine diamond can be bought at the lower figure. It is fatal to try and build up a business in any way that involves fooling the public. Therefore, it is time that all the fog should be driven away from these touring contests. The present one has shown that they can be made of value to both the public and the manufacturer. It is nearer what such an affair should be than any predecessor, although far from being right yet.

Big and Little, All Are Expected to Do the Same.

It is at once too strenuous in some conditions and too lax in others. It is beyond every conception of equity to have cars of all sizes, weights, horsepower and prices competing on equal terms. To those who merely read the reports in the papers one cannot tell but what every car not penalized went through the day or the tour with equal facility. Only those on the tour know the troubles of many that barely pull through and the ease with which others perform the task set. This amounts to misrepresentation and is wrong, because it is a fact that the public is so wise that it is coming to put no faith in the apparent teachings of such events. They know it cannot be true that all these cars of different sorts are equally good performers. They want the truth. The man who cannot afford to pay more than \$2,000 for a car does not expect it to climb mountains and run as fast and be as little trouble and to give as much comfort and last as long as one costing \$6,000. What he does want to know is about how much trouble and expense this or that car is on a long trip and what sort of a time schedule it can reasonably live up to.

To furnish this information the conditions of a contest should be the same in essentials as those of a pleasure tour, but just a bit more strenuous and exacting.

The first thing fundamentally wrong is to frame up rules so that a premium is placed upon speeding, with a time limit as to early arrivals. In all these tours the participants have been encouraged to "beat it" to the night stop, although there is a penalty for being there too early, or, to be precise, for "checking in" too early. Could anything be more ridiculous? The penalty for arriving ahead of time was originally designed to prevent speeding, but the rule of not making any allowance for time spent in making repairs to tires, or cars, for lunching, or for any unavoidable delays, has always induced the drivers to keep as much as possible ahead of schedule in order to have time to spare for unexpected delays. In consequence, the majority arrive at the end of the day's run far ahead of time and then have to stand in the



R. G. KELSEY'S MATHESON ON THE WOOD-SKIRTED HIGHWAY.



ROYAL TOURIST IN COOL SHADOWS OF THE ROADSIDE.

sun or rain till the time for checking in. Could anything be more farcical or more contrary to normal touring conditions?

The pleasure tourist who expects to dine at a certain time and place, if delayed by punctures or other troubles will make up some part of the time, perhaps, but he will not endanger his car and his life to be there at that time, as men have done on the present tour. The rule requiring all lost time to be made up is wrong in every way. It is the one that compels speeding and it is the one that gives out a false impression of merit, because under it a car may be penalized when its running qualities were not at all in fault. Stops should be deducted and a record of them kept, along with every repair and adjustment made.

Elaborate Arrangements Would Be Justified.

Observers would be necessary, of course. It is said that it is difficult to get honest observers. Well, it is difficult to regulate honesty under any conditions. There is certain to be a percentage of deception, as there is under the present rules, and the employment of observers would certainly decrease it.

Some incidental racing to be first at the finish is almost unavoidable under any conditions, although the system adopted on this tour of issuing numbers of the starting order to the cars and having a pacemaker whom none may pass has worked very well. This could be modified so that cars could check in on arrival and not have to stand foolishly waiting for their time.

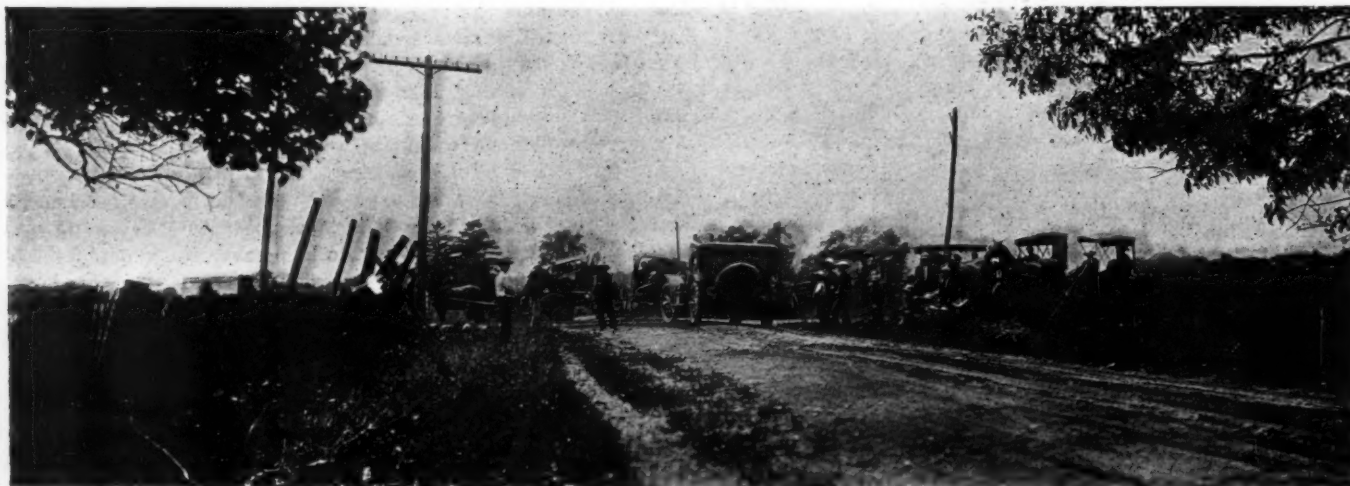
With the cars in classes there would be a pacemaker for each division, of course, and the whole arrangement would be elaborate, but what is worth doing is worth doing well, and one good competitive tour that would really bring out the truth of respective merit, as they have been supposed to do, would seem to be worth while. If a man was to be allowed the time consumed at lunch,

in repairing and in all stops, he would be foolish to risk his chances of lasting two weeks by fast driving. A fairly lively schedule could be made and those who chose to "beat it" might be allowed to do so, for there are wise tourists and foolish ones, but every inducement for "beating it" should be removed. One control a half hour or hour from the finish could be arranged.

An immense amount of detail will be necessary to work out a satisfactory touring contest, but it would appear to be worth while, for with a proper set of rules, that would let every car stand on its merit, it would be "good business" for every maker who really believes in his product to enter several cars. Those that made good would be vindicated and the honest makers of those cars that failed to make good would learn what they wanted to know—their weak points.

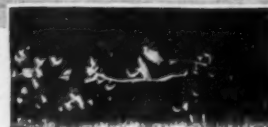
WILL THE FARMER INSIST UPON SPEED HIMSELF

"We read in a newspaper that a large manufacturing company is about to engage in building family automobiles for the farmers, but designed for room and ease for the farmer's family rather than for speed," says the *Delaware State News*. "Well, we never saw a genuine farmer yet who would buy an auto that hadn't speed and couldn't just split the air. The farmer now howls at the speed of the auto sports because he must take their dust and insolence. But if he had a machine himself he would undoubtedly let her whiz. Unless his old hoss is well on the road to the graveyard, a farmer will not permit another farmer to drive by him on the road now without a sprint. He is up on his high speed mettle all the time and prides himself on cleaning out any kind of a road race, as much as a school girl glories in being the belle of the school."



HAY MOTOR DRIVERS WATCHING THEIR RIVALS AT THE WHEELS OF THE "BENZINE BUGGIES."

The Details of the Days' Runs



ARE there any roads in the United States way by main strength over every foot timore on primeval cowtracks and through sharp declivities and hurtling down them their spinal columns over endless water—has come to the decision that there are not human endurance on one side and artiother, days become whole epochs in the that springs eternal that each one battles daily endeavor, and it is with a heaven-sent feeling of relief that each one draws up at the finish and receives his formal release—another day nearer the coveted goal. And this for the everlasting honor and glory of the American automobile and its builder, who has demonstrated that no conditions are too severe, no test too gruelling to be overcome with credit to itself by the fabric of iron and steel he has produced. Some day we shall have many miles or real roads. There's might in the automobile's growing army.

that deserve the name? Since fighting their of the distance between Chicago and Bal-veritable sloughs of despond, climbing to the imminent danger of dislocating breaks—each and every one of the tourists In the struggle between mechanical and ficially aggravated natural obstacles on the lives of the tourists. It is with the hope forth to perform his strenuous round of

WHAT HAPPENED ON THE SIXTH DAY

COLUMBUS, O., July 17.—There was some excellent going on this day, despite the fact that the rain of the previous night had raised some havoc with the surface of the Old National Highway, which figured for 106 of the 174.2 miles that constituted the allotted task. A thunderstorm soon after the start drenched the tourists, and the ruts, full of water, supplied a musical splash that made the traveling somewhat skiddy. At Greenfield, twenty miles, traps were said to exist, and so the procession poked its way through town, cautiously and with due respect to the law. Just about this time Old Sol's ruddy face came through the clouds, and the day took on a new aspect, and life was again worth living.

Cordiality and hand waves and flags marked the tour's path-way, and occasionally a bouquet found its way into a car, thrown by a rosy-cheeked lass who often supplied her name for a souvenir postcard. Lewisville enforced the speed limit vigorously, and there seemed a slight hesitancy in the greetings of tourist and onlooker. In other towns there was manifest great disappointment that the pace was not more rapid, and one small boy summed it up when he contemptuously said: "Why, I see 'em go faster every day than you fellers!"

At Dunreith a sign told that the new Maxwell-Briscoe factory was only ten miles away at New Castle. "Come over and see us!" was the invitation, but unfortunately we didn't have time.

Beyond Westville the Indiana barefoot boys and girls—some of the latter of pretty good size—were replaced for more shoeless boys and girls of Ohio. Freckles bedecked their countenances just the same, and sunbonnets and red calico dresses continued stylish in the villages and the country. The scent of new mown hay seemed equally sweet and the harvesting of acres of wheat and oats was moving apace. The country looked prosperous, and the farmers and their families welcomed the passing of the autos in holiday mood and with enjoyment.

At Dayton we bade adieu to the National Highway, said hello at the Stoddard-Dayton factory, got gasoline and lunch for nothing, and continued on our way rejoicing. Just as we entered the lively town the Speedwell Motor Car Company had thrust baskets of thirst quenchers into our cars.

Springfield's wideawake automobile club did a kindly act when it told us to beware of the water bars encountered soon after leaving the town, denoting the nightmares of road building by little red flags. The road, however, didn't prove half bad until we were within a dozen miles of Columbus, when it turned into a rutty road with all sorts and kinds of holes, and we bumped along until the welcome brick pavement was struck at the city's limits. The Columbus Automobile Club entertained in the evening at its headquarters in the Hotel Hartmann.

Steady, Regular Running Was Required.

Over the 174 miles of road between Indianapolis and Columbus few mechanical troubles made themselves visible. Nothing more was required of the machines than steady, regular running for nine hours and nearly all responded to the call. The exceptions were No. 24, Mitchell, which lost a little time on the road owing to ignition trouble, but which would have still reached control on time had not a puncture occurred during the last fifteen miles. A plucky attempt was made to get in on time by driving into Columbus at top speed, but it was then too late to make up the loss and 98 points penalization awaited the car.

With one exception all the Hower runabouts finished the day's run with perfect scores. C. S. Johnston, the owner of No. 109

Continental, was the unfortunate. At Richmond an officious policeman detained the driver for several hours. Misfortune still tracked the Hower contestant, this time a collision with a trolley at Dayton. Mr. Johnston, realizing his chances destroyed, retired.



MODERN TYPES OF CONVEYANCE AT THE INDIANA-OHIO STATE LINE.

THE SEVENTH DAY ARRIVAL AT CANTON

CANTON, O., July 18.—This figured as an eventful day in the history of the tour. There was as poor going getting out of Columbus as there was reaching its hospitable precincts. "Spaghetti Chief" Lewis went astray at Frazeyburg, some 55 miles onward, and the Maxwell and Premier climbed a mountain and climbed down again—some seven miles of the toughest sort of wasted effort—and before the error was corrected several cars, including that of Chairman Hower, had followed suit. Beyond Port Washington there is an abrupt turn with a bridge that jumps over the canal, and here several had to employ skill to avoid accident. One came to grief.

An average country road extended to Massillon, where the Jewel is made and where the most hospitable Cantonians first gave greeting to the visitors.

"Come in, the town is fine. It is yours."

That tells the story which was to conclude early the following

up an embankment and ditched. No. 90 Packard press car was close behind with disabled Deere No. 52 in tow, and the combined crew soon placed the Meteor on the road again, uninjured.

The worst accident of the day was that which befell W. G. Houck's Deere car No. 52. Near Port Washington the steering gear snapped, causing the automobile to shoot over the embankment into the canal. When the car was put on the road again it was found that the engine and transmission were intact, but that the steering apparatus was hopelessly disabled. Tom Fetch, who came along with Packard press car No. 90, rigged up a temporary steering control of an exceptionally ingenious nature. The emergency brake lever was dismounted and attached to a tire tool mounted in makeshift bearings across the fore end of the running board and secured to the connecting link. No tools or part not carried on the car were used for this clever piece of work. Two men were needed to operate



CARS PARKED FOR THE NIGHT ROUND THE SOLDIERS' MONUMENT AT INDIANAPOLIS.

morning when on the outskirts of the attractive little city a banner was to read:

"Good-bye! Good Luck! Here's to the Winners."

Mayor Turnbull, Committeemen F. C. McLain, H. A. Croxton and associates met Chairman Hower and gave to him the key of the city. Lakeside Park was open to the dust-grimed company, which was specially entertained at the Country Club across the lake, with His Honor, the Mayor, acting as the director of ceremonies.

How the Unlucky Ones Suffered.

The road surface for the day was never very heavy and was everywhere dry, yet there was such a succession of ruts and breakers, difficult grades and dangerous turns that it was impossible once time had been lost to again make good.

Early in the day A. M. Robbins, driving Aerocar No. 45, withdrew from the contest with a broken clutch. His previous record had been a clean score all along the line.

Meteor No. 37, entered and driven by A. L. Peterson, suffered from a leaky radiator, which on the hilly road made it impossible to continue. On a quiet lane the radiator was dismounted, the soldering iron heated at a nearby cottage and the leaks soldered up. A couple of hours later the car missed a sharp turn, ran

the car, one on the running board to steer and another to control the engine and change gears. For a mile the Deere was towed by the Packard, but when it was found that the steering gear acted satisfactorily, the tow rope was cast off and the machine brought in under its own power.

No. 31 Walter, entered by E. S. Lea, after a sharp turn off a bridge, shot over an embankment, a drop of about ten feet, without suffering any injury. Put on the road, it was in such good condition that it got into the control on time.

No. 43 Acme entered Canton with a loss of 42 points, the hard going having caused a bit of trouble in the rear axle. Gus G. Buse, who had retained a clean score up to this point, and looked upon as one of Buffalo's best representatives, suffered to the extent of 91 points. About sixty miles from home he passed the writer, who at the time was jogging along easily in the White non-contestant, driving at a very rapid rate. According to a rough calculation, he was making a last desperate attempt to reach control by racing over the rough roads. As we were the last on the road and had taken careful note of all lame contestants, the report that Gus G. Buse lost time through missing the trail in Coshocton appears to be correct. All the Hower runabouts—seven of them being still in the running—finished with perfect scores.



[TOURISTS THE CENTER OF POPULAR INTEREST AT COLUMBUS.]



CANTON'S SHADED STREETS PRESENTED A SCENE OF ANIMATION.

EIGHTH DAY THE HARDEST OF THE TOUR

PITTSBURG, PA., July 19.—Enthusiasm galore greeted the arrival in this smoked hustler of American cities, but the ride from Canton—just under a century in distance—was the hardest run of the tour, and the schedule of six hours compelled some fast and skilful driving, especially during the route through Allegheny and Pittsburg right up to the entrance of the Hotel Schenley. But the mayor had prepared for the unusual occasion and police lined the streets and held back the thousands who shouted and waved as the smut-faced drivers and passengers whirled along at speed never before allowed in this city.

For the greater part of the way from Canton the going was simply frightful. Near Columbiana the "Firestone Homestead," a summer outing place of the Firestone Tire Company, the most palatable sort of a lunch was handed to the flying squadron as it temporarily stopped in its rocky progress.

But the worst section of the journey came in getting into Allegheny. At Freedom, some thirty miles out, "Phil" Flinn induced a change of route in reaching his native city, and there are some who believe the book would supply the better going. It is safe guessing that any route into Pittsburg is pretty bad, and it is a fact that the one followed figured as the worst stretch of road of the tour.

At the Schenley there were good accommodations, and the Pittsburg Automobile Club added to the festivities by a band for the afternoon and evening. President Kneeland, Secretary Paul C. Wolff, Dr. J. A. Hawkins and other club members were much in evidence, for few of the tourists had the ambition to accept the club's kindly invitation to call at its downtown headquarters.

Six clean score Gliddenites and one clean score runabout failed to make the schedule time of six hours. Altogether ten touring

cars and two runabouts had penalizations placed against them on the eighth day's running, proving that the test was the most severe of any to which the cars had been put. Had not the police of Allegheny lent that valuable aid and Grand Boulevard been opened for a fast final spurt several others would have been unable to accomplish the run on the very restricted time allowance.

Those That Were Unlucky and Met Penalizations.

F. J. Pardee, driving American Mors No. 10 for clean certificate only, lost his chance of victory through tire trouble; his wild dash over the last ten miles failing to bring him to the checker's line when he was clocked to report in. "Sid" Black, piloting Lozier No. 25, arrived with a time penalization of 57 points. For a couple of days he had been struggling with his front springs, one of which had broken as early as the Chicago-South Bend stage. When both smashed it was impossible to maintain the strenuous pace any longer.

Mrs. Cuneo, who commanded much attention all along the tour, had eight points placed against her for her late arrival, due to the breaking of one of the front springs of her Rainier No. 26. Gaeth No. 28, driven by Paul Gaeth, lost time on the road principally on tires and had his perfect record destroyed by a penalization of three points. No. 37 Meteor arrived very late, having had further trouble with a leaky radiator. On a previous day the starting lever had been bent in such a way that whenever the motor was cranked the lever bore upon the lower part of the radiator and broke away the tubes.

The little Maxwell No. 41 also tarnished a clean score by a time penalty of 37 points. Acme No. 43 reached control with a loss of 27 minutes as the result of a weakened rear axle.



THE APPROACH TO PITTSBURG WAS VERY PICTURESQUE.



DAY OFF AMONG THE SUMMER MAIDS AT BEDFORD SPRINGS.

Another of the perfect score men to meet with misfortune was F. N. Nutt, driving No. 55 Haynes, with a penalization of two points for late arrival. No. 58 Maxwell, a machine with a previous good record, lost three points, also for late arrival.

Among the contenders for the Hower runabout trophy John Haynes, driving Dragon No. 112, was the most serious suffered.

The fan pulley sheared off when the car was ahead of its schedule, necessitating a repair of such a lengthy nature that there was little chance of reaching control on time. Later a blow-out, while traveling at a rapid rate, placed the Dragon hopelessly in the rear. H. E. Coffin's Thomas Forty No. 102 received its first penalization for late arrival, the loss being 77 points. The White and Stoddard-Dayton were comfortably on time.

NINTH DAY THE ALLEGHENIES WERE CLIMBED

BEDFORD SPRINGS, PA., July 20.—Out of the deceptive haze of the Smoky City the dirt-caked and bedraggled procession this morning emerged, and, truth to tell, had they been on horseback instead of in autos they might with few exceptions have been taken for present-day Coxeyites. The other afternoon, while viewing the passing through Massillon, "General" Coxey is said to have remarked that the autoists gave his former "army" a close call in appearances.

Through Wilkesburg and then winding down into Turtle Creek, in and out of Wilmerding, and next East McKeesport and the Greensburg pike began. The pall of soot seemed to be thinning and there were patches of light in the sky. Twenty miles there were occasional bits of climbing, and the tourists expressed delight at finding that the water bars were being lessened in number by laborers who worked sturdily. It was learned later that Congressman George F. Huff of Westmoreland county was the man who had given the final word that resulted in lessening these cuss-word producers. Greensburg is the Congressman's home and it is a smart city and thoroughly up-to-date.

It is up and down to Youngstown, and a couple of miles beyond the route paralleled Loyalhanna river, the valley rich in foliage and deliciously cool. The climb of the Chestnut Ridge wasn't hardly worth talking about, and the worst encountered came in the way of a soft spot on the level road near Ligonier. A rough clay hill, next Laughlinstown, and then the string of panting autos tackled the four-mile dig up Laurel Ridge. Rain threatened and at the top a fog enveloped the summit and shut out the picturesque views possible in all directions on a clear day. A coast of two and a half miles down to Jennerstown caused some burning of brakes.

Stoyestown lies at the base of the Alleghenies, and 'tis an upward journey, with occasional variations of downward dips, to the summit, near which is Buckstown, where the farmers for miles around were picnicking for the day, drawn thither by the

passing of the autoists. Sunshine broke forth and the eight-mile coast to the foot disclosed scenic beauties in profusion. Of course, the water bars had kept everybody bouncing about and cussing, and some of the inexperienced mountain drivers did more or less damage to their weakened cars.

'Tis an attractive spot, this Bedford Springs Hotel, where a rest is scheduled for over Sunday, and Manager Wing exerted himself to the utmost to provide for the autoing army, despite the already crowded condition of the well-conducted hostelry.

Some Penalization Came in the Crossing.

With but very few exceptions the sufferers on the ninety-seven miles of mountain climbing were those whose machines had been weakened on previous stages. Columbia No. 56 stripped all gears but the high and was unable to make the journey. Meteor No. 37, after making arrangements to solder the leaky radiator when the motor had been cranked, and cover the distance without stopping the engine, entered into collision with a trolley car and was obliged to remain in the neighborhood of the Smoky City until next day, arriving at Bedford on Sunday night.

Deere car No. 51 was patched up for the run and reached Bedford Springs in a tottering condition, stripping the intermediate gear on the way. To bring it over the mountains after the injuries it received through falling into the canal was a remarkably plucky performance on the part of the driver.

Acme No. 43 stayed behind several hours to repair a damaged rear axle, being heavily penalized for late arrival. Despite his bad position and weakened axle, J. W. Mears declared he would continue as a contestant.

T. P. Jones, driving Pierce No. 21, after a nine days perfect performance, trailed in late and incurred a time penalization of 90 points. The delay was caused by five punctures and two blow-outs and by Mr. Jones' young son being thrown out of the tonneau and having to be attended to by a doctor. This penalization spoiled



WHERE THE LONG ROW OF DUSTY CARS WERE GARAGED OVER SUNDAY IN THE FIELD AT BEDFORD SPRINGS.



BURMAN (PEERLESS) TACKLING 1863 WATER BREAKS OR "THANK-YOU-MA'AMS" THAT CORRUGATE PENNSYLVANIA ROADS.

the Pittsburg club's clean Glidden score and placed Buffalo in lead.

Mrs. Cuneo had been delayed on the run to Pittsburg by a broken front spring, which called for further attention before Bedford Springs was reached. For the last few miles, where speed was possible, the lady driver made a bold dash for home and was rewarded by a rousing cheer from those gathered in the hotel grounds. The inexorable checker, however, marked down three points for late arrival.

When everybody at Bedford Springs had retired for a well-earned rest, Mitchell No. 24 slipped into the ground, unofficially checked of course. Both front springs being broken, the run over the mountains had been a run in name only. W. M. Lewis announced that he desired to continue as a contestant and insisted he would complete the tour at any rate.

Hower trophy contestants suffered heavily during the day. A. E. Hughes, with clean-score Pierce No. 100, had a series of tire troubles and a few mechanical difficulties, which caused him to arrive with a time penalization of six points.

H. E. Coffin, on Thomas "40" No. 102, when trying to pass a touring car at high speed outside Pittsburg, went into the ditch and broke the front spring.

H. O. Smith's Premier No. 104, with a clean score at Pittsburg, was unable to continue owing to the driver, Harry Hammond, falling ill and no substitute being available.

Up on the mountains, miles from any village, Wallace Owen was stranded with his Pennsylvania runabout, also a clean scorer. An encounter with a stony stretch of road broke a steering arm. At noon on Sunday the idling crowds in the Bedford Springs

Hotel grounds were suddenly awakened to life by the appearance of Owen on his runabout, evidently in good shape, the broken steering arm having been replaced.

Only two men, G. S. Smith on a Stoddard-Dayton and H. K. Sheridan on a White steamer, now remained with clean scores out of an original list of eleven competitors. John Haynes arrived on time and was checked in as perfect, but as he had stripped a gear on the journey, had previous penalizations and had no intention of continuing as a competitor, the contest for the Hower trophy narrowed down to a duel between the Stoddard-Dayton and the White.

S. Black, in charge of Lozier No. 25, Sunday afternoon drove into the hotel grounds with his two front springs patched up with stays and buffers and one rear spring in a weakened condition, having successfully crossed the mountains.

BEDFORD SPRINGS, PA., July 22.—When early risers looked down into the hotel grounds this Monday morning they were surprised to find that a couple of runabouts had slipped in quietly during the night. R. G. Kelsey's big Matheson, No. 106, withdrawn several days before with a broken connecting rod, had made a night journey, as was evidenced by its searchlight and lamp for speedometer. Thomas runabout No. 114, attending to Warner speedometer business, had come in on a flat tire, with a weakened right front spring, and a left front spring which had not formed part of the car's make-up when the tour began. The driver, J. G. Barclay, on retiring for a well-earned rest, gave orders to be called at an early hour, but only woke when the tire cars had gone, and so had to await the arrival of a new set of tires.

TENTH DAY'S SCENIC BEAUTY WASTED ON CONTESTANTS

BALTIMORE, Md., July 22.—The route of to-day's 140-mile run supplied scenic beauty in abundance, and though they had what proved to be a most liberal schedule in ten hours for the journey none of the contestants and few of the others took time to observe the grand country through which they passed. From Bedford to Foltz there was mountainous driving, some forty miles, over Rays Hill, Sidling Hill and Scrub Hill, and then the conquering of Tuscarora Mountain. Of course, there were the water bars, but the roadbed was solid and the scenery alluring in the extreme. The Little Juniata River was followed in the early miles of the run, and the rippling stream, gurgling along, often underneath a canopy of foliage, supplied an inviting pacemaker. The red dirt road was dusty and there came discomfort when the cars bunched.

Descending Tuscarora Mountain, its side revealed panoramas of scenery the thorough enjoyment of which was spoiled by the

incessant water bars, which the drivers continued to cuss long and loud and the tonneau passengers added much strength to the vociferous expletives.

At Foltz the pike into Hagerstown began, but before that city was reached there came an easy climb of the Blue Ridge Mountains, which contributed scenery less rugged than that of the Alleghenies, but possibly more pleasing to the eye. How good that pike felt is easily imagined, for despite the fact that it contained water bars these spoilers of pleasure traveling were not of such an obnoxious sort as those met with in Pennsylvania.

Maryland's hills looked like a "Garden of the Lord" to the famished auto horde, and its red brick houses, whitewashed barns, and stone fences, with fields of grain, harvested and stacked, presented a picture that few saw as the winding-ribbon of road wore away beneath their flying car.

Some did stop for dinner in historic Frederick, with its Bar-

bara Freitchie lore, but the greater number followed close on the heels of Chairman Hower's pacemaking car and scurried for the outskirts of Baltimore, there to kill time until they could report at the night control.

It was a pity that the grandest day's run of the tour should have been so scantily appreciated except by a handful.

One Perfect-score Car Loses Its Place.

The New York Motor Club was a severe sufferer in the day's run, owing to the heavy penalization of Stoddard-Dayton No. 38 to the extent of 142 points for late arrival, and of Mrs. Cuneo also for late arrival with her Rainier No. 26. W. W. Macdonald, the Stoddard-Dayton driver, had brought his car to every previous control with a perfect score, but was seriously delayed on this stage by the brakes burning out. Later a pin sheared on the transmission brake, causing a further loss of time.

Mrs. Cuneo's Rainier, which started out with a broken front spring, had a blowout of one of the front tires, which rendered the car momentarily unmanageable. It swung off the road between a telegraph pole and a tree, bending the front axle so seriously that a lengthy stay had to be made at a nearby blacksmith's shop.

Excepting the Elmore, which arrived three minutes late, owing to water circulation troubles—the fan having broken and the driver refusing to remove the seals which he had placed on the car at the commencement of the trip—and the already heavily penalized Mitchell, which obtained 60 points more, all contestants finished the day's run perfectly.

No changes were made in the position for the Hower trophy, the White steamer and the Stoddard-Dayton remaining with perfect score, while A. E. Hughes retained his previous position with Pierce No. 100 penalized a total of six points.

ON THE ELEVENTH DAY THERE WAS DUSTY RIDING

PHILADELPHIA, July 23.—There was little of pleasure touring in the long 174 miles roundabout run from Baltimore, over roads which spilled dust and reeked with water bars—that abomination inflicted upon highway travelers by the roadmakers of the Keystone State. The Marylanders are similarly partially guilty, but not to the extent of the Pennsylvanians.

In the vicinity of Hanover there is one T. J. O'Neill, vice-president of the Automobile Association of York county, and he and his associates have convinced some of the road supervisors that water bars are not essential to the life of a highway, and on both sides of Hanover there was a welcome relief from these preventives to automobile enjoyment.

To-day in Hanover the way into, through and out of town was marked with white flags, and two railroad crossings were specially guarded, as the dusty caravan flew along. As it entered York a sign placed by the A. A. of Y. C. told that the speed law was being strictly enforced. Sure enough it was, for a chain of "cops" extended through the entire town, the inhospitality of which will be remembered for some time to come. One might have thought that a band of desperadoes were coming, of which the town desired to protect itself from.

The numerous toll gates, the soft roads and the innumerable water bars made the run one of the most trying and disagreeable of the tour. At Lancaster the local automobile club supplied appreciated lemonade that washed out the throats of the parched tourists.

Near Philadelphia, at Glen Loch, the enterprising *Press* had hung a banner of welcome, at which were given pennants that carried the incoming cars past all the remaining toll gates without the annoyance of shelling out small change and stopping. Light refreshments also were tossed into the cars.



UTILIZING THE THOMAS'S GENEROUS LOAD OF GOODRICH TIRES.

At Bryn Mawr the Pennsylvania Auto Motor Company made an acceptable gift to the arrivals in the form of baskets of fruit, chilled and palatable.

"We wish you all success," the accompanying card said, though "Wally" Owen, the company's representative, had met with misfortune on the rough Pittsburg-Bedford section and mournfully came along of necessity as a non-contestant.

At Ardmore the Autocar Company said on a banner across the road: "If we can help you, stop!" But the kindly offer did not find many takers, the Quaker City being too near at hand.

To-night the Quaker City Motor Club vociferously entertained the tourists at the Majestic Hotel, Mayor Reyburn officially welcoming the party to the city. The Automobile Club of Philadelphia and the Automobile Club of Germantown also extended courtesies to the visitors.

Score Changes of the Day.

Although all the clean-score men for both Glidden and Hower trophies maintained their position, the day was responsible for a number of penalizations among those who had already suffered. Haynes No. 55 at an early stage of the journey had to abandon with a broken rear axle, after having done nine days clean running and been penalized two points on another day.

F. J. Pardee, driving American Mors No. 10, was in exactly the same position as the Haynes driver. For nine days he had run clean, on one day had a minimum penalization and to-day fell down entirely through having to change his left rear spring and repair a broken leaf of the right rear spring.

Mrs. Cuneo arrived in Philadelphia on her Rainier No. 26 about half-past 8 o'clock and was penalized 191 points. On the tenth day the breakage of one front spring caused her to incur a penalty of 426 points, and, the opposite side having given trouble to-day, she went still further down in the list. To bring the car in under such conditions required a large amount of courage on the part of the lady driver—courage which was rewarded by a rousing cheer from those gathered about the hotel—for one spring was propped up entirely by buffers of various kinds and the other was patched up with half leaves and could have had very little life.

In No. 7 Welch, driven by F. S. Welch, a very promising competitor was wiped off the list through the breaking of a crankshaft. The Welch's previous performance had been twelve points on the first day for a road accident in no way imputable to the mechanism, and a clean score on every succeeding stage. This failure caused the Automobile Club of Detroit to be wiped out of the competition for the Glidden trophy.

Meteor No. 37 arrived on schedule time, but owing principally to a damaged radiator and a collision with a trolley car the automobile had been out of the competition for a couple of days, A. L. Peterson's object in continuing being to get a certificate for having covered the entire distance.

Along the Road and at the Night Stops~



WALTER C. WHITE IN HIS WHITE STEAMER ON THE ROAD NEAR INDIANAPOLIS.

A Good-Roads Auto Caravan.—Reflecting upon these things, it occurs that the best way to campaign for good roads would be to have just such a caravan of automobiles as composes the present A. A. A. tour carry a delegation on a long tour, instead of their traveling about by train, as they now do. In this way they would, first of all, speak with the feeling of personal experience, and, secondly, they could make their appeals in the various localities effective by employing the pointedness of local conditions. Through Ohio, Illinois and Indiana are to be found rich farming districts, where the sturdy agrarians get but one day's wage for the toil of two days, because what they harvest from the fields on one day it takes them one full day more to realize upon in cash, the second day being spent in the haul to market and back, whereas good roads and the modern vehicles that are concomitants would reduce their hauling to fully half the time. It takes the concrete example to reach the bucolic mind, and, therefore, such a campaign as suggested, with the evangels of road improvement gathering the data for local argument as they proceeded, would probably be more effective than any yet conducted, for at the bottom of this whole road problem is the blindness of the farmer to the practical benefits of good roads and his unwillingness to submit to taxes for highway improvement.

But It Is Inaccessible.—In the Alleghenies the tourists passed through one place where there was tossed into each car a well printed and floridly written pamphlet extolling the merits of the place as a summer resort. It was a puny bit of a village, but, as the book said, it was "dropped like a gem in the setting of the grandest mountains," and it really might become something of a resort if there were some way of getting to it, and opportunities for riding, driving and motoring after one was there. Yet the minds of the people had not been opened to the paramount necessity of accessibility and of good roads in the vicinity of any resort, so they were spending money advertising before they had the goods, instead of getting busy on road improvement. If this place was visited by such a touring party as suggested, and the Supervisors taken for a trip in the cars, the situation could be made clear to them as in no other way. They would realize that first of all they must have the roads, and the building of them would, in the majority of cases, begin forthwith.

Brakes Were Well Tried.—On Saturday, when the trip over the Allegheny summits revealed how much brakes have been improved and how much there is yet to be done in this direction, the Berliet car, which had been a more or less sensational performer all along, was revealed as being dif-

ferently fitted in this respect than any other. It raced up and down the hills and bumped along without any trouble, just as it had been doing every day, and it was wondered why its brakes did not heat up. Investigation developed the fact that it can alternate its braking system in four different applications. The clutch can be thrown out and the gear lever set at neutral, so that the driver does not have to hold the clutch pedal back with one foot, but has them both free for the two foot brakes. Then he can alternate with the foot brakes the emergency hand brake, and can also brake with the engine.

How Goodrich Looked After Its Users.—A big Thomas Flyer, with its capacious tonneau stocked with outer shoes, inner tubes, repair outfits and detachable rims, was constantly on the search from Cleveland to New York for Goodrich tire users in need of a replenishment of their stock. H. C. Miller, general representative of the Goodrich Company, had charge of the tire equipment, with W. H. Rutherford assistant, while W. Turner sat in authority at the wheel. It was an exceptionally heavy load that the Thomas carried in its tarpaulin-covered tonneau, yet the car was never delayed by tire troubles of its own. To carry a load of tires insures freedom from tire trouble, declared the Goodrich representative. Other travelers on the 1,600-mile journey had their reasonable share of punctures, but were never troubled with blowouts.

Our Alleged Roads.—From the first day out the impression that has been at once primary and paramount is the wildness of American roads. It strikes one that all the fine phrases about the conquest of the West and the subjection of the wilderness is merest moonshine, when twenty miles from the principal cities of the various States are found alleged roads that in reality are old trails, practically unimproved since the early settlers used them. Perhaps the road conditions were no great surprise to any one, because such execrable highways are to be found in the native State of every American; but the long stretches of primitive clay roads, running through fertile farming districts and connecting important cities of the Middle West, gave to those who had not toured this section before a new and very vivid appreciation of the need of a main pike between the cities.

Something About "Napoleon" Hower.—As the tour progressed the participants grew to like Chairman F. B. Hower much better than they did at the beginning. It became apparent that in his autocracy he was showing no favoritism, but ruled impartially and without vacillating. His task was difficult and at times exasperating, but he was always ready to hear what any complainant had to say. Mr. Hower is

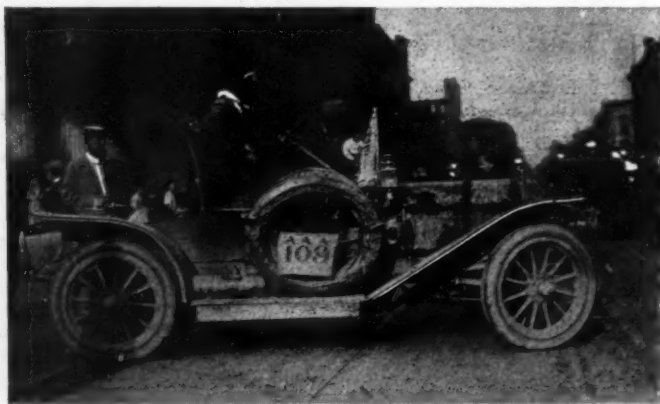


JOHN HAYNES AND THE DRAGON ARRIVING AT INDIANAPOLIS.

the first vice-president of the Automobile Club of Buffalo, and will probably succeed to the presidency next year. For ten years he was commodore of the Buffalo Yacht Club, and his services were so acceptable that the only manner in which he escaped a further continuance in office was to sell his boat and thus become ineligible.

How Diamond Tires Were Supplied.—Diamond tire users had their stand-by in a White steamer, fitted with a special body for carrying casings, tubes, repair outfits and tools, which accompanied the competitors and gave help where help was needed. H. G. Smith, of the Diamond Tire Company, had charge of the equipment, and H. E. Stein drove the steamer throughout. A stock of about eighteen casings and fifty tubes were carried continuously on the car, the provision being renewed each night from a large quantity traveling from point to point by rail. Tire assistant is a strenuous occupation, declared H. G. Smith, for the relieving car must be out first and come in last, and when control is reached a busy time is spent getting in touch with the various drivers, noting their wants, arranging for the shipment of old stock back to the factory and the forwarding of the new material to the next stopping point.

The Sealed Bonnet Maxwell.—One of the real marvels of the run from Chicago east was the keeping of the pace by Charles Price's little 16-20 Maxwell, that has been running with its bonnet sealed since June 28, when it started in the Chicago reliability run. Afterward it was one of the winning team in a six-hour race at Peoria, Ill., and ran until the last hour of the 24-hour race at the Harlem track, Chicago, on July 13, until it was put out of business by a collision. Its seals remained intact, and during the tour they were inspected every day by David Beecroft, of the committee of the Chicago A. C., who first put them on.



JOHNSTON'S CONTINENTAL RUNABOUT, WHICH HAD HARD LUCK.

Greetings Along the Line.—While there were cities and towns on the route of the tour that gave slight heed to the passing of the motor-driven procession, enthusiasm as a rule was contagious, and the greetings of onlooker and autoist were simultaneous. One who never tired of shouting a resonant hello to all comers was J. W. Gogarn, publicity manager of R. M. Owen & Co., and frequently when the observer seemed a bit backward, especially in country districts, Mr. Gogarn brought forth a quick response by his insistent way of salutation.

The Experimental "Little Six" Pierce.—No car commanded more attention during the tour than the one used officially by Chairman Hower, with whom Mr. Glidden also rode. This car is the first small six-cylinder of the Pierce Company, and it was "tried out" on tour with the capable Winchester at the wheel, supplemented by "Jack" Utely, once chief mechanic on the warship Kearsarge, and "Tony" Ledderman. If there were any faults in the "Little Six" needing correction it is a certainty that this trio discovered them.

The Spaghetti Bunch.—Beyond question, the hardest workers on the tour were the drivers and occupants of the two "spaghetti" cars—Maxwell and Premier. Earliest up in the morning, it was mighty hard for them to seek their cots early enough to get sufficient sleep. "General" Lewis and "Lieutenant" Mortimer Reeves were on the job all the time, and Drivers Reynolds and McNamara never failed at any stage of the game. Starter and Checker-in Ferguson was another who worried along unruffled with small chunks of sleep.

Regulars Didn't Like the Autoists.—The arrival of the automobilists at Bedford Springs was regarded as an insolent intrusion by that peculiar person, the chronic sojourner at pleasure resorts, who, like birds of passage, hies from hotels south to others in the north and back again as the weather changes. One woman was overheard to remark to her companion at the Springs: "I suppose, after these dirty autoists go away, they will clean out the swimming tank, won't they?"

That Chicago-New York Highway.—It is safe to say that those who previously had been but mildly interested in the project of a New York and Chicago highway will henceforth be enthusiastic, and they will go even further, for after the trip over the long stretch of the Old National Highway, from Indianapolis to Columbus, no one could fail to wonder why this bit of roadwork never has been continued until it became a transcontinental causeway.

One Publicity Man Who Drove.—R. H. Johnson, the energetic exponent of White publicity, drove his steamer through the entire tour. It is only in the past few months that Mr. Johnson has taken a place at the wheel, and though he has "trade affiliations," he must be considered an amateur driver. Therefore his feat must be rated most excellent, for there were no simon-pure amateurs who completed the long tour in the driver's seat.

What One Hotel Proprietor Said.—There is a mighty fine hotel in South Bend, Ind., and its proprietor, Mr. Oliver, who gave the house his name, passed out some advice to his clerks, bellboys and help before the rather unprepossessing cavalcade of autoists arrived. "Don't judge any of these men by their clothes or appearance," spoke he, "for they may be millionaires, despite their disguises."

Lid Off for Autoists in Pittsburg.—At Pittsburg the Chief of Police declared that the lid was off regarding speed, and the way the cars raced into and out of that burg, under police protection, would have made a New York cop faint away.

DYNAMIC PROPERTIES OF VANADIUM STEEL*

By J. KENT SMITH.

BEFORE I speak of vanadium itself, perhaps you will allow me to say just a few words on the subject of steel from an engineering standpoint. Under the conditions of practice comparatively few years ago we were accustomed to judge with considerable success the steels that we had by their behavior under static tests, that is to say, under tests where the force and the body were more or less at rest, or, anyway, very slowly moving. We had a rough kind of an idea that anything that gave certain static tests would behave in a certain way in use. But as things have progressed, our point of view has changed in regard to this somewhat. A body may be perfectly statically ductile and a body may be perfectly susceptible to satisfactory static tests, and yet when you apply stress tests dynamically (hit the body or vibrate it, or anything like that), it goes to pieces or something happens. As the conditions of engineering requirements got more drastic, we began to have more and more breakdowns, which we were accustomed to call "mysterious failures." Of course, a few of the cases of failure were not mysterious, because the metal was obviously of bad composition; but in very many cases the metal would give perfectly good tests chemically and statically; it might even look perfectly well under the microscope, yet it had broken. The fact of the matter was, it practically got tired of its work and had "thrown up the job."

Series of Light Blows May Prove Fatal.

I think it is beyond argument that we can break a piece of metal by applying repeated strains less than its elastic limit. For instance, supposing we take a piece of metal the elastic limit of which is represented by any number as 10. Now, if we put a series of strains on that metal, each of whose intensity is only represented by the number 5, in due time we will fracture it. If such strains be only represented in intensity by the number 2 1-2, we will in time fracture the metal, but in an interval of time much greater than twice that accompanying the first set of conditions. In other words, all steels deteriorate under repeated strains, and such deterioration is enormously more rapid as those repeated strains approach the elastic limit of the steel. *But such rate of deterioration is not proportionate in different steels, and it is precisely here that the very great value of vanadium comes in, as the vanadium steels have proved themselves, both by test and in practice, to be absolutely pre-eminent in their power of resisting such deterioration.*

The usual dynamic tests include a sweeping shock on a notched bar, repeated blows by a falling weight on either a notched or an unnotched bar, rapidly alternating impacts accompanied by permanent distortion on an unnotched bar, and rotary vibratory flexion tests produced by the suspension of a counter-weight on a rapidly revolving bar of such shape that the area of fracture is definitely located.

Comparative Life Under Repeated Stress.

The rate of deterioration before alluded to as to repeated stresses becomes less severe, as is amply illustrated in Table I.

I strongly advocate also that the usual static "tensile and bend" tests should, in many cases, be supplemented by the knowledge of the behavior of the steel under torsion, while I attach great importance to the repeated bend test made in such a way as to indicate the point at which the metal begins to "break down." In those respects the vanadium steels take the front rank. The action of vanadium is very powerful; it

may be said that vanadium is to metallurgy what strychnine is to medicine, and therefore it is only used in small quantity, or carrying out the simile, small doses.

Vanadium increases the strength of steel *per se*, but to the greatest extent by acting through another constituent

TABLE I. COMPARATIVE EFFECTS OF CHROMIUM AND VANADIUM ON STATIC TESTS.

| ROLLED BARS UNTREATED | Pounds per Sq. In. Elastic Limit | Ultimate Tensile Stress | Elongation on 2 Ins. | Reduction of Area |
|--|----------------------------------|-------------------------|----------------------|-------------------|
| | Tons Per Sq. In. | Tons Per Sq. In. | Per Cent. | Per Cent. |
| <i>Crucible steels:</i> | | | | |
| Plain carbon-manganese..... | 35,840 | 60,480 | 35 | 60.0 |
| Plain + 0.5 per cent. chromium..... | 51,396 | 76,160 | 33 | 60.6 |
| Plain + 1.0 per cent. chromium..... | 56,000 | 85,568 | 30 | 57.3 |
| Plain + 0.1 per cent. vanadium..... | 63,840 | 77,052 | 31 | 60.0 |
| Plain + 0.15 per cent. vanadium..... | 68,096 | 81,760 | 26 | 59.0 |
| Plain + 0.25 per cent. vanadium..... | 76,384 | 88,032 | 24 | 59.0 |
| Plain + 1 per cent. chromium + 0.15 per cent. vanadium..... | 81,088 | 108,864 | 24 | 56.6 |
| Plain + 1 per cent. chromium + 0.25 per cent. vanadium..... | 90,496 | 135,296 | 18.5 | 46.3 |
| <i>Open-hearth steels:</i> | | | | |
| Plain carbon-manganese..... | | | | |
| Plain carbon + 1.0 per cent. Chromium + 0.15 per cent. Vanadium..... | 39,648 | 72,128 | 34 | 52.6 |
| | 77,056 | 116,480 | 25 | 55.5 |

(present in such quantity as not to dynamically "poison" the steel in question), while it confers in itself to steel properties of great dynamic value. The first is exemplified by the table.

Its Value as a Master Alloy.

Vanadium thus can be regarded as a "master" alloy, in that it can act in totally different ways, and by judiciously using it in the line one wishes to follow, steels of great dynamic superexcellence, great static superexcellence, or combinations of both, are attainable, such as can be obtained by *no other known means*. The second table illustrates types of this.

The "vanadium axle steel" is of particular interest, as the attainment of steel statically comparable with a nickel steel, in fact superior to it, even statically, combined with the ductility of mild steel and an infinitely greater power of

TABLE II.*

N. B.—All figures obtained under comparative conditions.

| NATURE AND TESTS | 1 Carbon "Axle" Steel | 2 Nickel "Axle" Steel | 3 Vanadium Axle Steel | 4 Vanadium Crank- shaft Steel | 5 Vanadium "Continual Mesh" Gear Steel |
|--|--------------------------------|--------------------------------|--------------------------------|---|--|
| <i>Static—</i> | | | | | |
| Yield point (lbs. sq. in.) | 41,330 | 40,270 | 63,570 | 110,100 | 224,000 |
| Ultimate stress..... | 65,840 | 87,360 | 94,080 | 127,800 | 232,750 |
| Ratio..... | 0.62 | 0.56 | 0.66 | 0.87 | 0.96 |
| Elongation % on 2 in. | 42 | 33 | 33 | 20 | 11 |
| Reduction of area..... | 61% | 58% | 61% | 58% | 39% |
| Torsional twists..... | 2.6 | 33 | 4.2 | 2.5 | 1.8 |
| <i>Intermediate—</i> | | | | | |
| Alternating bends..... | 10 | 12 | 18 | 10 | 6 |
| <i>Dynamic—</i> | | | | | |
| Resistance to pendulum impact (ft. lbs.) | 12.3 | 14 | 16.5 | 12 | 6 |
| Alternating impact, number of stresses..... | 960 | 800 | 2,700 | 1,850 | 800 |
| Falling weight on notched bar, number of blows | 25 | 35 | 69 | 76 | |
| Rotary vibrations, number of revolutions..... | 6,200 | 10,000 | 67,500 | | |

resisting fatigue, as evidenced by vibratory and alternating impact tests—such inference, I may say, is amply borne out by practical experience, puts a new phase on the "factor of safety" question in connecting rods, coupling rods, crankshafts and the like.

As a Component of Spring Steel.

In another grade comes vanadium spring steel, which has proved of enormous value, not only in enabling a spring to be

*Extract from a lecture delivered before the Central Railway Club, Buffalo, New York, by J. Kent Smith, Chief Metallurgist of The American Vanadium Company, Pittsburg, Pa.

made having twice the coefficient of safe working load (and thereby rendering possible the lightening of the spring itself), but at the same time one which is, so to speak, endowed with the property of "life" and does not "get tired" and break down as a pure result of service. Again, the value of such a spring is great in regard to the fact that it can safely meet "overload."

The subject of case-hardening is a fascinating one, and one that could with justice occupy half a dozen lectures itself. In a lecture such as this it would be impossible to go into detail. Suffice it to say, therefore, that no *tempering steel* should be case-hardened, owing to the inevitable brittleness produced in the core through the necessary operation of quenching. A special variant of vanadium steel is made for this process, utilizing the toughening action of vanadium on a quenched high carbon steel and the conferring of strengthening and fatigue-resisting qualities to the core of the article, thus enabling a result of wonderful value to be obtained.

Vanadium case-hardening steel stands on record as the finest material of its kind, as the result of very great numbers of practical experiences.

As a Factor in Steel Castings.

Vanadium has been very successfully used in castings. It is not advisable, from a practical steel-founding point of view, to use chrome in a "casting." We use plain vanadium, and we anneal the casting at about 950 degrees Centigrade. Then you will get a casting which, in resisting vibration, is very much like a good type of forged carbon steel; it is infinitely superior to the ordinary carbon steel *casting*. Of course, the ordinary steel casting in carbon does not stand vibration like forged carbon steel, but the vanadium steel *casting* will stand it like a carbon steel *forging*, while in its use in casting we are getting a combined static and dynamic action. We are increasing the static strength considerably, if not to the fullest extent, while we are increasing the dynamic qualities enormously. We use it in casting chiefly with a view of increasing "dynamics" and not "statics." I may seem to be a kind of a maniac on dynamic tests, but their importance has been borne on me so often in ordinary work. There is no doubt about one thing—you cannot adduce dynamic qualities from static tests any more than you can do the other way about; they are in two totally "different streets," to use an every-day expression.

Vanadium steels are no more difficult to forge than the ordinary corresponding steels. The only word of warning I would sound here is that vanadium steels must be treated as high-temper steels. That is to say, we must not go and plunge the heat into it all at once. Vanadium structural steel forges exactly like a 3 1-2 per cent. nickel steel. If you apply the heat and work to it at first reasonably gradually you will have no trouble afterward. The steel will stand as much heat as mild steel, but in heating any steel of high temper you are very liable to disintegrate the metal and you have to observe reasonable care and precaution. As regards the maximum contents of vanadium I have found myself, from experience, it is very seldom advisable to go above 2 per cent.; certainly never above 25 per cent.

Its Use in Other Special Services.

There is no doubt in my mind that the chief difficulty at present existing in the locomotive frame is the resistance through molecular disintegration. If we use vanadium there we cure it; there is no question about it. That has been a shining example of where "dynamics" came into play, almost exclusively; it is almost simply and solely a question of resisting vibratory molecular deterioration.

I hope that I have not given the wrong impression, I have harped so much on the question of dynamics to the seeming exclusion of statics. Do not think that I am sneering at the static tests or that I apparently dismiss the value of high

static strength and ductility. I do not. I attach great importance to them. But I speak from experience when I say that I am sure that we were beginning to lose ourselves in straining to get a high static strength that we really *did not want*, at the sacrifice of something that we *did want*, and therefore that we would have been better off if he had gone less for increased static strength and increased our dynamic qualities.

THE MARKET FOR AUTOS IN SOUTH AFRICA.

The following letter has also been received from Consul-General Lay at Capetown regarding the market for American automobiles in South Africa, and the lesson it conveys should be of considerable interest to American manufacturers:

Three or four years ago there were more American cars in South Africa than any other kind. They were not the best type of American cars, being principally runabouts, which were unsuited to the rough roads; consequently they did not last, and American cars got a bad name. It is only fair to state that the cars imported were of the cheap class, and were not fair specimens of American motor manufacture, and I do not think that any really good American car is at present in use in this country, though one would have thought that with notoriously bad roads in the States American cars would be more suited to South Africa than any other. As far as I can at present see, there is nobody attempting to push the trade, and yet I believe trade is to be done, though, owing to the depressed times, not to a very large extent at present; but obviously it is the best car for the money that will sell, and owing to the enormous standardizing in America I believe manufacturers in that country could really put an equally good car on the market at a lower price than English or French makers, though you must remember that there is a 3 per cent. preferential tariff in favor of English cars, the customs being 15 per cent. on foreign cars, with 3 per cent. rebate on English, which, considering cars cannot be manufactured in this country, is a most ridiculous charge.

It is difficult to tell you the cost of running a car per mile, as they vary so much; but if a man drives a car himself of, say, from 10 to 15 horsepower, which is quite sufficient in this country, where the roads will not allow of high speed, and allowing that it runs 5,000 miles a year, I think £100 (\$486.65) per annum is a fair estimate, this including the cost of tires, which is by far the largest item. I think it is more expensive to run cars in Johannesburg than here, because the roads are worse, and generally it is more expensive in South Africa than in any European country because of the enormous tire cost, owing to the rough surface of the roads.

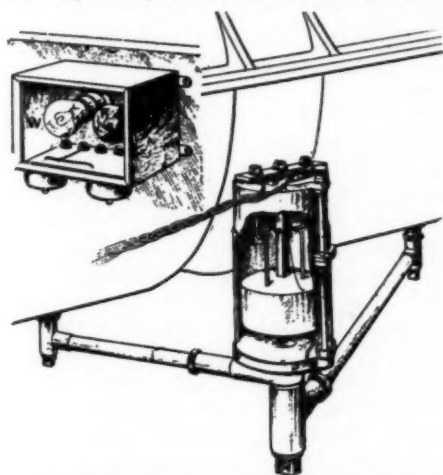
At present there are about 1,000 cars in South Africa. There is no reason why the number should not be doubled if any energetic man pushed the business and gave reasonable terms, and I think that among doctors and commercial travelers customers would be found. In time I think the farmer might be induced to use motor wagons, especially in districts where water is scarce, but it will take some time to educate the farmers up to anything so modern.

Mr. Lay also forwarded a copy of the Handbook of the Automobile Club of South Africa, of which Mr. J. M. P. Muirhead, P. O. box 1161, Cape Town, is the honorary secretary. This book gives chronological landmarks, road maxims, roadside troubles, first aid in accidents, night signals, patrol depots, and table of distances, and is on file for public reference at the Bureau of Manufactures, Washington, D. C.

Present tendencies of design where that most important essential of the power plant is concerned—the lubrication—are decidedly toward the much-desired goal of simplicity. When the automobile first came on the scene its maker found himself compelled to buy all his accessories in the open market, and as a result he had to buy many things that were totally unsuited to his purpose. Not the least of these were oilers—that is their generic title, and as such they were known in connection with the various kinds of machinery for which they had been designed and on which they had been rendering perfectly satisfactory service for years, but that machinery was not the automobile motor, nor anything like it. That became evident after a while and has been so ever since, and, fortunately for the automobile user, the builder recognized that fact long ago and set about making improvements without delay. The result is apparent in the many simple and self-contained systems of lubrication now in use.

TREND OF INVENTION IN OTHER LANDS

TO what lengths an inventor may go in evolving a highly complicated device to serve a purpose that can be far better carried out by the simplest of arrangements, has seldom been better illustrated than by an instrument which has been given the euphonious title of "Oleometer" and which is shortly to be placed on the market in England. It is described at length in *The Autocar*, from which the accompanying illustration as well as the details of its operation are taken, though, as a matter of fact, the latter are obvious at a glance. It will be seen that it consists of a float chamber communicating with the oil pan of the crankcase, a float in the former carrying contacts making connection with a circuit in which two small incandescent lamps are placed on the dash. One is white and the other red, representing low and high level conditions of the oil in the crankcase and corresponding to the contacts already mentioned, so that when the float rises as a result of an excessive amount of oil in the engine base, the red light shows, and when it falls too low, the white light appears. That is, it does, if the switch under its containing case is pressed, so that the device is not automatic in any sense of



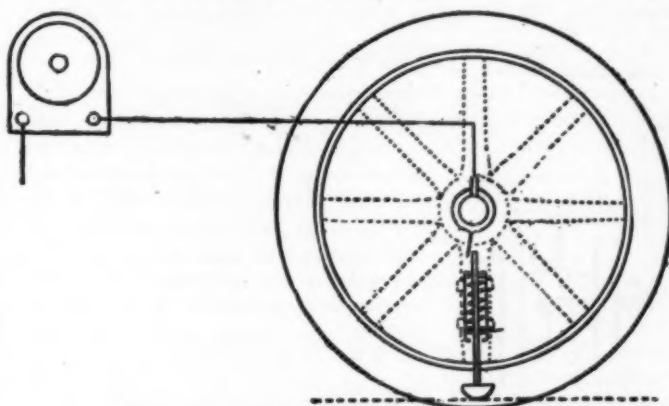
THE OLEOMETER AND ITS COMPLICATIONS.

the word, and pressing the buttons for high and low levels represents an operation which it takes all this complication to act as the substitute of looking at a gauge glass, which is an instrument not provided as often as it should be, or lifting one of the handhole covers off, and they are now made to come off readily in the majority of cars, and are as easily replaced. The Oleometer, on the other hand, relies upon the accumulators for its operation, and in order to be sure that both the latter and the circuits of the device are all in good order, a third button is provided to test them, this lighting both lamps simultaneously and independently of the float-contact apparatus. Such devices are interesting illustrations of what can be done in thinking up new and weird accessories with which to burden the car, but their utility is generally in inverse proportion to their complication.

To Give Warning of Tire Defections.

For some reason or other, the many devices that have been brought forth at one time or another for the purpose of apprising the driver of a car of the fact that one of the tires has suffered injury in order that it may be repaired before further damage is done, have received little or no attention on the part of the average autoist. With the far smaller tires and heavy cars of a few years ago, it was seldom necessary to provide any other warning than that given by the car itself, yet it has not been unusual even under such conditions to find that a tire has been completely ruined through lack of notice of its condition in good season. Both cars and tires have been improved to such an extent during the interim that it is now nothing unusual to have a tire go flat without the slightest notice of its demise, unless rough spots, car tracks or similar obstructions that cause the rim to come in contact with the ground are encountered, and not infrequently it is driven several miles in this condition. Some of the devices that were placed on the market a few years ago were the

very essence of simplicity, beside being well adapted to give the necessary audible warning of the tire's demise, but somehow or other they "fell flat" instead of the tires they were intended to protect. Now an English concern comes forward with an electrical device of the kind which is described and illustrated in



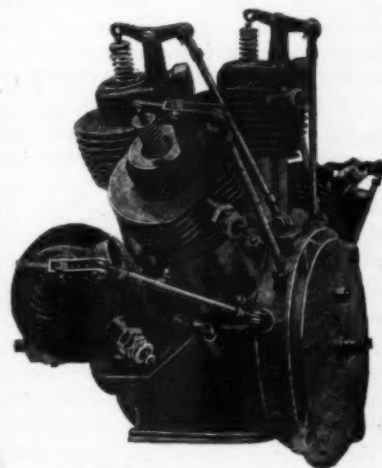
AN INGENUOUS ELECTRICAL FLAT TIRE ALARM.

Motor (London) as follows: "A short brass cylinder containing a plunger is clamped on to one of the spokes as shown. The rod of the plunger carries a boss or foot adjuster, so that it is depressed by the side of the tire on contact with the road when the tire is partly or wholly deflated. On the axle is clamped a metal collar carrying an insulated strip of brass, and when the plunger rod is pushed up it makes contact and completes an electrical circuit and rings a small bell on the dash. The plunger is in direct connection with the frame by means of a copper wire joining it to the hub flange." The battery and ground connections are not shown by the illustration.

As a whole it is so simple that the average autoist, with his knowledge of electricity, could readily set to work and devise something equally effective for himself with very little trouble.

A New Low Limit in Weight per Horsepower.

With a total weight of slightly less than 100 pounds the new 35-horsepower six-cylinder motor made by Pelterie for aviation, the accompanying illustration of which is taken from *Omnia*, would appear to set a new low limit in the weight of motors of this class that is apparently a very close approach to a possible minimum in this respect. Its arrangement is further unique in that the six cylinders composing it are mounted on a crankcase barely long enough to accommodate two of their size were they placed in the ordinary manner. This also greatly simplifies the engine by making possible the employment of a two-throw crankshaft, each group of three cylinders acting upon a common crankpin. Air-cooling is employed, of course, and the cylinders, which are set at an angle of approximately 90 degrees to one another, are also staggered so that each one gets the full benefit of a direct



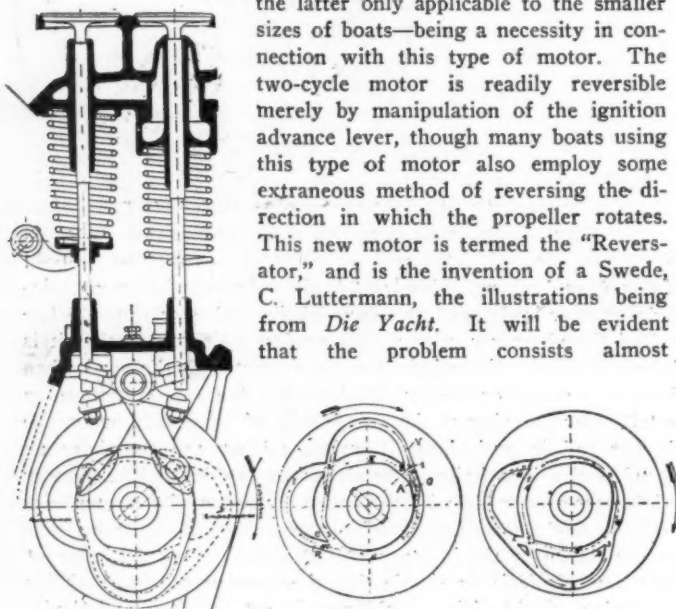
A 100-POUND, 35-H.P. MOTOR.

cooling current. Considerable ingenuity has, of necessity, been exercised in the arrangement of the valve-operating mechanism, the three push rods for the front group of cylinders being of the usual type employed in connection with rocker arms, while the other three are jointed and operate at an angle as shown, the inlet valves being of the automatic type. No details of the dimensions of the motor or of its speed are given, though the latter as well as the compression must naturally be high in order to produce its rating of 35 horsepower. It is of considerable interest as demonstrating to what lengths light weight and compactness may be carried where the internal combustion principle is applied to the design of a motor for aeronautical purposes.

Reversible Four-cycle Marine Motor.

Inventors and motor designers have long been engrossed in the study of the four-cycle motor for marine purposes with a view to devising some simple means of reversing the latter. At present a

reverse gear or a reversing propeller—the latter only applicable to the smaller sizes of boats—being a necessity in connection with this type of motor. The two-cycle motor is readily reversible merely by manipulation of the ignition advance lever, though many boats using this type of motor also employ some extraneous method of reversing the direction in which the propeller rotates. This new motor is termed the "Reversator," and is the invention of a Swede, C. Luttermann, the illustrations being from *Die Yacht*. It will be evident that the problem consists almost



VALVE MECHANISM AND CAM DETAILS OF REVERSATOR MOTOR.

entirely of the matter of making provision for reversing the cycle of the engine, as is done in the steam engine, when the position of the valve is shifted by means of the reverse lever, thus making what would have been an exhaust stroke, an intake stroke and *vice versa*, as any four-cycle motor can be made to start in the reverse direction merely by advancing the spark sufficiently to cause a backfire, as is done with the two-cycle. The principle is thus the same as that of the steam engine, except that as every other stroke is an idle stroke in the four-cycle motor, the timing of the valves must necessarily be altered to a greater extent, or 90 degrees in a revolution, the inlet valve being advanced that much while the opening of the exhaust is retarded a corresponding amount, or the opposite where the change desired is from a reverse to a forward movement. To accomplish this, a disk with the proper slots cut in its face and in which sliding members work, transmitting the motion to the valve stems, are employed. These slots are cam-shaped, corresponding to the profile of the cams themselves, and the operation of reversing consists in shifting the position of the cam to the extent permitted by the slot. In the sectional illustration, the arrow indicates the direction of forward rotation, while the smaller view shows the exhaust and inlet cams. The lefthand set of cams are those of the exhaust, while the righthand are those of the exhaust valve, the position in which they are illustrated corresponding to that required for the normal forward movement, usually denominated "clockwise." Rotating them through 90 degrees causes the motor to reverse.

ONE WAY OF PREVENTING TIRE BLOW-OUTS.

By A. D. HARD, M.D., MARSHALL, MINN.

Automobile users who have had experience on country roads know that the most severe wear on pneumatic tires comes from ruts. Hard, sun-baked roads that have been deeply rutted by horse vehicle travel while soft, quickly tear the rubber from the sides of the casings and expose the fabric to still more rapid disintegration until a blow-out report announces that your tire is almost worthless. This side wear is far more destructive than the tread wear, yet no satisfactory device has so far been placed upon the market to eliminate it. I have tried several plans for protecting the sides of my tires, and have settled down upon the one which I am about to describe as the best and cheapest, so I gladly give the benefit of my experience to the readers of *THE AUTOMOBILE* who may have occasion to use rough and rutty country roads, and they are doubtless legion.

Procuring for a song two discarded rim-cut tire casings of the same size that I used on my wheels from the junk pile of a tire repair shop, I removed the clincher flanges with a sharp knife, and also divided the casing square across. With a 1-4-inch punch I made 24 holes in the edges of the casing, equidistant, and 3-4-inch in from the edge. These holes will be almost exactly four inches apart. I then prepare twelve retaining wires for each side of each of my two casings as follows: A piece of No. 8 galvanized iron wire 10 inches long is bent in the shape of a "V" and the ends are bent into hooks at right angles with the plane of the "V," the hooks being 3-4 inch long. These retaining wires are now hooked into the holes in the casings so that the ends of the hooks shall be on the outside, and the hooks closed down upon the casing with a hammer, which will make a good job.

Jack the front wheel up, deflate the tire and place this prepared protector on over the casing. It will not reach all the way round, and a gap of four or five inches will have to be filled by fitting in a small section of the same kind of tire casing and retaining it by several double hooks 2 inches long made of No. 8 galvanized iron wire, with the ends of the hooks outward. When the protector is in place on the wheel the "V" shaped retaining wires should correspond with the spaces between the twelve spokes of the wheel. Now, with a piece of rawhide lace leather, 1-2-inch wide, the retaining wires are laced to the wheel spokes, the lace leather passing first around the spoke and then through the apex of the "V" shaped wire until both sides of the protector are firmly held to the sides of the tire. The tire is then inflated and you have a double casing on your front wheels with the sides well protected by the rows of iron hooks, which project exactly where the side wear comes from rutty roads. It will be noticed that I have directed that these protectors be placed upon the front wheels. The reason for it is as follows: The presence of this protector increases the diameter of the front tire from 1-2 to 3-4 inch, and when it has passed through a rut, the action of the protruding wires and the increased diameter leave the rut enlarged so that the rear wheel tire can pass through with little, if any, wear. This also obviates the retarding influence of the rut on the rear wheel, and greater propelling power is available. The front tires look a little clumsy, but the fact that they are almost absolutely free from all punctures, stone bruises, rim cuts, tread and side wear and blow-outs, combined with the fact that the rear tires are incidentally protected and given a good path to travel in, is satisfaction enough to offset almost any amount of clumsy appearance.

"The development of the internal combustion motor has not been so startlingly rapid as that of the steam turbine, but in one essential point it assumed a leading position, and it has retained that position over all other prime movers. I refer to the heat efficiency of the engine. The early gas engines of the now prevailing compression type had an indicated efficiency of about 16 per cent. This efficiency has been slowly increased, until at the present time gas engines are in regular use having an indicated efficiency of 35 per cent., and even a little over. No steam engine efficiency can be compared with these figures."—Dugald Clerk.

LETTERS INTERESTING AND INSTRUCTIVE

The Office of Contact Breakers and Tremblers.

Editor THE AUTOMOBILE:

[829.]—I have read a number of articles in "The Automobile" on the subject of magnetos, induction coils, and wiring in general, but I have not yet found any that explain the office of the circuit-breaker on the magneto and the vibrator on the induction coil. Will you please enlighten me?

A SUBSCRIBER.

Los Angeles, Cal.

The contact breaker on the magneto has two very important functions to perform. The type of high-tension magneto in general use is synchronized with the motor, that is, its operation keeps step with the latter and the working of the contact breaker is made to correspond exactly with the occurrence of the two impulses per revolution of the usual four-cylinder, four-cycle motor. Its other function is purely electrical. You are probably aware that the magneto with its H or Siemens type of armature, would generate four peaks, or current impulses per revolution, when revolved continuously. The second office of the contact breaker is to utilize but two of these current impulses per revolution, and also, which is the most important, to maintain the armature winding short-circuited upon itself except at the very moment that the current is needed to create the spark for firing the charge. In other words, the current under these circumstances is said to "build up" to the point at which the contact breaker opens, allowing the current to pass into the external circuit, this point corresponding with that of the peak of the alternating wave generated by the magneto. Thus the contact breaker's chief function is to hold back the current until it reaches its maximum value for ignition purposes.

Regarding the vibrator of the ordinary induction coil used for ignition, this is necessary to give the current the periodicity required to enable the coil to operate. A continuous current sent through the primary winding of an induction coil without the interposition of a trembler or vibrator would not produce more than a single secondary impulse at the terminals of the latter winding, so that when a repetition of this is desired, it is necessary to make and break the contact in order that the core of the primary coil may be successively magnetized and as rapidly demagnetized, the rapidity of the latter action within certain limits determining the efficiency of the coil.

As an alternating current fluctuates from zero to its maximum value in alternate cycles, no trembler is necessary when used with an induction coil, although promptness and more than either certainty of action are of paramount importance for ignition service.

What Is the Fuel Consumption of Various Sized Motors?

Editor THE AUTOMOBILE:

[830.]—Can you inform me the amount of gasoline a car should use in relation to the bore and stroke of its engine, as well as its rated horsepower, when running from 15 to 30 miles per hour?

Prince's Bay, N. Y.

H. V. ROTOPAN.

We have no such data at hand and to our knowledge nothing of the kind has ever been definitely ascertained and preserved. The condition you mention, *i. e.* running 15 to 30 miles an hour, is much too indefinite to base any calculations of fuel consumption on, as the latter would naturally depend on the load, this consisting of the car itself, whether the touring type or a runabout, whether it had a full complement of passengers or not and more than either of these, the condition of the road and the gradients as it will be readily evident that more than twice as much gasoline will be necessary to propel the same weight of car through deep mud and sand on a hilly road as would be required over a smooth and level surface. The light touring car of 20 to 30 horsepower is popularly considered as being capable of making twenty miles on a gallon of gasoline, while the heavy car of 45 to 60 horsepower requires a gallon for every ten to fifteen miles, these figures differing with the conditions and being based on the experience of a number of drivers during the past few years.

How to Place a New Valve on an Inner Tube.

Editor THE AUTOMOBILE:

[831.]—I find your Letters Interesting and Instructive very helpful, but there is a question that I am unable to find an answer to in any of the automobiling books or papers, and I have not seen it discussed in your columns, though it may have been up in early numbers before I began to take "The Automobile." This is the matter of repairing, or putting in a new valve for the inner tube, when, as so often occurs, it leaks or goes out of business for other reasons.

The old valve is vulcanized to the inner tube. To attach a new one, do you cut out the old one at the base and attach the new one in the same place with the aid of an acid and cement solution, such as is used for patches, or in what way can the repair be made?

Does the flat base of the new valve go on the outside or the inside of the tube?

These may seem very simple questions to people who know, but it is just these simple little things that the new hand does not know, and that he is rather ashamed to ask his friends about for fear they may laugh at him for his ignorance. "A NOVICE."

St. Paul, Minn.

Doubtless the reason why you have never seen this request for information in our columns, as well as your not finding it dwelt upon in books concerning the automobile, is due to the fact that it is decidedly not a repair that comes within the province of the amateur. If you have any inner tubes that require new valves, we should recommend by all means that they be forwarded to the manufacturer or sent to one of the numerous branch depots scattered throughout the country and which are about the only places that have the proper facilities for doing work of this nature. The flat base of the new valve goes on the outside of the tube, but it requires an experienced hand at tire repairing to put it on properly, and we doubt very much if the ordinary acid and cement solution such as is used for making emergency patches will make a satisfactory job of such a repair. To our knowledge it is one that is seldom, if ever, attempted by the amateur, as it can only be satisfactorily done on the large automobile tires now in universal use by those experienced in doing such work and who have the proper facilities for carrying it out.

Some Questions Concerning a Motorcycle.

Editor THE AUTOMOBILE:

[832.]—How can the power of a 21-2-horsepower motorcycle engine be increased to 3 or 31-2 horsepower without altering the motor very much? Could this be done by lengthening or shortening the connecting rod?

(2) If a motorcycle engine were to be run as a stationary engine, would it be necessary to put another flywheel on the outside of the crankcase, beside the two on the inside?

(3) Can you give me some idea as to how the horsepower of an engine is found? An answer under the head Letters Interesting and Instructive will be appreciated.

A SUBSCRIBER.

Chicago, Ill.

We should not recommend attempting to increase the horsepower of a motor such as you mention, particularly when the increase desired is in excess of 50 per cent. of the original power. The power of a motor may be increased to a certain extent without any very radical alterations, but the result is never a certainty, and the change may involve unexpected complications that render the motor altogether worthless. An increase of compression is the expedient most frequently resorted to in order to increase a motor's output. The simplest way of doing this is to tap the inner side of the cylinder head and fasten a small cast iron plate to it in order to reduce the clearance space, but this must be carefully done, so as not to obstruct the valve ports. It can also be done by using a longer connecting rod, but this is not advisable, as the result is apt to be the destruction of the balance of the moving parts made by the original designer.

2. It would not be necessary to add a third flywheel to the motor when used for stationary purposes, but we doubt very much if there is any motorcycle engine on the market that is adaptable

to this service, as it is the extreme opposite to that for which it is designed. In fact, such engines usually have a very high compression and it is doubtful if they could be kept cool for more than a comparatively short time when running stationary and under load.

3. The horsepower of an engine is found by multiplying the mean effective pressure, usually written m. e. p., by the length of the stroke in inches, times the area of the piston head, times the number of power impulses per minute, this product then being divided by 33,000, which represents the equivalent of a horsepower in foot pounds per minute. For ordinary calculations the pressure, which is one of the most important factors, is usually assumed. The formula adopted by the Mechanical Branch of the Licensed Association of Automobile Manufacturers, after much study, is the following: $\frac{D^2 \times N}{2.5}$, where D represents the diameter of the cylinder squared, times N, or the number of cylinders, divided by 2.5, which is a constant computed from the known horsepower of a large number of the most representative American four-cylinder motors. The formula given above is usually written $\frac{PLAN}{33,000}$ and has long been employed in calculating the power of steam engines, the only change made in it being that N represents the number of power impulses per minute instead of the number of revolutions as in the steam engine. The brake horsepower is found by testing the engine on the brake, that is, applying an adjustable load to it with the aid of a dynamometer, the motor usually being coupled to a dynamo, the current output of which is measured while the speed of the motor is also taken. At the same time indicator cards are taken and with the aid of a planimeter, the exact m. e. p. of the engine is calculated.

Some Queries Regarding Extreme Offsetting.

Editor THE AUTOMOBILE:

[833].—Presuming that you are conversant with the Ramsay crank mechanism, which has a connecting rod about 3 3/8 times the length of the crank, and a crank of ordinary design, having the shaft located off the axis of the cylinder a distance equal to the length of the crank, I would like to have you inform me, under Letters Interesting and Instructive, if the following conclusions drawn by the Ramsay people are, in your estimation, correct. If not, why not, and if so, is there anything not shown by the Ramsay people that could in your opinion seem to offset the following advantages, as claimed by them.

1. It increases the crank effort.
2. It applies energy to the crank during 192 degrees of crank travel, as compared with 180 degrees in the ordinary engine.
3. It reduces cylinder friction.
4. It gives a slower movement to the piston at the beginning of the return stroke, reducing back pressure and allowing for more thorough expulsion of the exhaust gases.
5. When the cylinder has become warm it decreases leakage during compression.
6. It makes practicable the use of splash lubrication for horizontal engines.

Last, but not least,

7. It makes an auxiliary exhaust port practicable without any of the existing disadvantages.

G. W. TYRELL, M.D.

Perth Amboy, N. J.

In our opinion, the Ramsay engine is merely an instance of carrying to an extreme a principle that has been found to be beneficial on a very limited scale. Some of the very old steam engines of the single-acting type were built in this way, but that is so long ago that but few in the present generation are aware of the fact. Of late years it has been found of benefit to design automobile engines with the center of the cylinders slightly off that of the axis of the crankshaft, the offset being to the side of the idle stroke in order to bring the connecting rod more nearly vertical on the power stroke. This reduces friction considerably by cutting down the angular pressure of the connecting rod against the piston, which in turn bears very hard against the cylinder wall and tends to cut down the power slightly in the ordinary engine. But it has long been recognized that carrying the principle to an extreme involved the very disadvantage that it was designed to obviate. That is, it introduced an excessive amount of angular pressure on the idle stroke, although the advantage of having an almost vertical position of the connecting rod on the

power stroke was obtained, thus continuing the application of the energy to the crankpin through a slightly greater portion of the crank circle. Accordingly, about the maximum offset found in automobile engines is 25 per cent. of the length of the stroke, and the average from 10 to 15 per cent.

We are more or less familiar with the engine in question, and while we have not made any particular study of it, still we cannot see that many of the claims you mention are based on a very substantial foundation, as, for instance, the decrease in the compression with a worn cylinder. Nor that of making practicable the use of splash lubrication in horizontal engines as it is already used in thousands of engines of this type with perfect satisfaction and in which there is no offset at all. The best example of the use of an auxiliary exhaust port is also to be found in an engine which is designed without any offset. We have not taken up the claims you enumerate in consecutive order, as we do not deem them of sufficient importance. Like many manufacturers who make engines, or anything else for that matter, of a special nature, it is probable that the makers of the Ramsay are prone to exaggerate its good qualities a bit, and overlook some of its faults.

Altering a Runabout to Ride More Comfortably.

Editor THE AUTOMOBILE:

[834].—Will you please answer the following through your Letters Interesting and Instructive?

My 1905 Maxwell runabout seems to ride a little roughly of late. If I were to put full elliptic springs on it both front and rear and lengthen the wheelbase by placing the front axle further forward to the extent of making it come flush with the frame end, would the benefit be sufficient to warrant making the change, and would the longer wheelbase make it harder on the hills and in mud for the engine?

In equipping gas lamps with the "Royal Multiplex" electric burner, should the distance from the lens be changed? With the above named bulb, the lamp only throws a narrow shaft of light, but it goes much further ahead than with gas.

Verona, Ill.

FRANK STERNE.

We should certainly not recommend making the radical changes to your car that you mention in your letter. The fact that the car does not seem to ride as easily as it did formerly would appear to be due to the fact, either that the old springs are worn out—that is, they have lost their life to such an extent that they no longer respond, or something may have gone wrong with their adjustment, thus preventing their proper action. It would not be an easy matter to put full elliptic springs on a car the suspension of which had originally been designed for the semi-elliptic type, without making a study of all the requirements, and the latter would doubtless be found to involve other changes than the mere installation of the springs themselves. Nor should we recommend lengthening the wheelbase in the manner mentioned, as we doubt very much if the result would be of sufficient benefit to warrant the expense. In all probability, new springs of the same type as the car now carries will probably remedy the difficulty, or it may be that, as already mentioned, the only thing necessary is a little readjustment. If the latter is not found to provide the desired remedy, we should advise consulting the makers of the car before attempting any such radical alterations as you mention.

Not being familiar with the particular lamps that you carry, nor, for that matter, with the type of burner you mention, we are hardly in a position to make a definite reply to your second question, but it is evident from the changed character of the light produced that shifting the relative positions of the burner, or bulb, and the lens, until the proper focus is found, would be likely to produce a more satisfactory result.

How to Measure Coil Current Consumption.

Editor THE AUTOMOBILE:

[835].—Will you kindly give me, through your correspondence department, a method for determining, with the aid of a small voltammeter, the number of amperes used by an automobile spark coil? The particular coil I have reference to is designed to operate at six volts.

"FAULTY SPARK COIL."

The small pocket meters in general use for testing batteries are not well adapted to this purpose, as they are not calibrated on a

sufficiently fine scale to make the reading of much value. To make such a test properly a low-reading ammeter is what is required. The scale of such an instrument only reads to two amperes by tenths of an ampere, and such special meters are now being placed on the market by a few manufacturers. The method of making the test is the same in either case, the connections being as follows:

Insert the meter in the primary circuit of the coil to be tested; that is, between the battery and the coil, so that the entire current will pass directly through the meter. Start the engine or turn it over quickly by hand and the reading given by the instrument will be a close approximation to the current consumption of that particular coil. A well-made six-volt coil, such as you mention, ought to give satisfactory service on from 0.5 to 0.75 ampere, and in no case should greatly exceed one ampere, any excess over this amount being indicative of faulty adjustment of the vibrator. When the meter is connected up as already referred to, in order to make the test the vibrator should be adjusted so that the coil is not consuming more than the amount of current mentioned unless it be found that satisfactory ignition cannot be obtained except with a higher reading. Each coil should be tested separately in the same manner, this always being done with the engine running, as an idle test is very misleading. You may be able to obtain a fairly good result with the ordinary pocket meter, but we doubt it very much, as the latter is usually calibrated with a total reading of at least 25 amperes. The divisions are accordingly very fine for the units representing one ampere, and as the hand jumps every time the current is sent through it it is almost impossible to make a close test with such an instrument. This is also a disadvantage of using any meter on this work, but with the engine turning over at its normal speed the hand of a low-reading meter will fluctuate comparatively little.

Is a Magneto a Good Investment?

Editor THE AUTOMOBILE:

[836.]—I have been a subscriber to "The Automobile" for a number of years and think it considerably more valuable since the publication of letters and inquiries has been made a feature. I would like to have a little information with regard to magnetos.

Do they give much trouble? That is, if they receive reasonable care.

Are they satisfactory if run with a friction wheel against the flywheel, using the same timer and coil that are already on the machine, and that have been used with dry cells? Is there any way to stop the noise in new planetary gears? I am using heavy grease as a lubricant.

OLD SUBSCRIBER.

West Branch, Ia.

What you refer to in your letter is really small direct current dynamo instead of a magneto, there being considerable resemblance, however, as some of these small generators are made with a permanent horseshoe field, the same as a magneto. They are, however, equipped with a commutator and are designed to generate a direct current. They are usually found to give satisfactory service in connection with the ordinary equipment of timer and coil as employed with dry cells, but they are most largely used in connection with stationary engines where the speed is more uniform than on an automobile. They may be run by friction from the flywheel, but require a good governor to take care of the sudden and extreme fluctuations of speed. They are not magnetos in any sense of the word, as the latter produce an alternating current and are generally designed to run synchronously with the motor, only generating the current just when it is needed to fire a charge in the cylinder. They give very satisfactory service with reasonable care and are very largely used. There are also special dynamo and battery outfits on the market which give good service.

It is more or less difficult to prevent the noise caused by a planetary gear when the latter is being used on the low speed or reverse, as under such circumstances a number of small pinions are in mesh and carrying considerable load. Such a gear, however, should occasion less annoyance on this account when new, the amount of noise created increasing with its age as the pinions wear. One of the chief causes of noise is the fact that the teeth

of the pinions are poorly cut and grind against one another, this also causing a loss of power. Grease should tend to lessen this somewhat, though the makers of a small car of which thousands were turned out a few years ago recommended that nothing but comparatively thin oil be put in the case of the planetary gear. We have known of a mixture of jewelers' sawdust and heavy lubricating oil being used with excellent results in a very noisy change-speed gear of the sliding type, and it might also prove efficacious in the planetary. The use of a heavy grease or paste in such close quarters necessarily introduces greater friction, but as the low gear and reverse are used comparatively little this would hardly be any great objection if it served the purpose of lessening the noise.

AN ENGLISH IMPRESSION OF THE GRAND PRIX.

Editor THE AUTOMOBILE:

[837.]—My impressions of the Grand Prix are mostly centered, naturally, round the two "Weigel" cars, and I should imagine that your readers would be anxious to know what was the fate of the two English competitors.

It was hardly a lucky day for England or for the Weigel cars. But the bad luck had nothing to do with either the cars or the men who drove them. Any chance that we may have possessed for victory was utterly ruined by the detachable rims we employed, which unfortunately we had not had a chance to try or we should have found out the error of our choice long previously. They only came into our possession on the Saturday before the race, when we were in France. Immediately we tried them we knew that any chance of success with them was out of the question.

As to my general impression of the race, I think it is the finest race ever been. On the day of the race itself the organization was perfect. The rules were carried out within their meaning, leniently yet sufficiently strict, and taking into consideration the fatigue of the men. I consider the officials were just and fair to everybody, no matter what their nationality. I can hardly say as much for the day of verification. My cars were not passed until close on midnight, and to have to wait till midnight to pass the cars, and start racing a few hours afterwards is distinctly unfair to the drivers. Everything was done correctly, but it was Bedlam let loose.

My impressions of the cars, borne out by the times, are distinctly that the Mercedes were the fastest on the course. Jenatzy's wonderful lap proved that. The cars that gave me the best impression were the Dietrich cars, and they were unfortunate in losing. Duray's performance, in my opinion, was wonderful; he had Lancia at his mercy at the end of the first lap, and I believe could have passed him in the second one. Nazzaro's victory, in my opinion, was a piece of luck. At one time Wagner was miles ahead of him, and his other stable companions equally so.

We have been very unlucky in the Grand Prix, but we have had our lesson, and will take it to heart. Two cars will race in the Ardennes, and I believe they will be well placed. It must be taken into consideration that these are practically touring cars, being the mere coupling of two touring engines, and I have no hesitation in saying that these cars, with the exception of the three I have named, were the fastest on that course. Viewing this race as a whole, I have no hesitation in saying that France is still the center of motor car racing, and if British manufacturers wish to obtain a worldwide reputation and not merely a local one they would be well advised to assist each other in entering cars for the Grand Prix, and I hope that next year there will be a good showing of English cars.

D. M. WEIGEL.

London, Eng.

REQUIREMENTS OF CANADIAN ENTRY.

Editor THE AUTOMOBILE:

[838.]—Referring to the letter on page 98 of the July 18 issue of "The Automobile," from "Subscriber," in reference to the conditions upon which an American car may be taken into Canada, I am enclosing herewith a letter received from the Chairman of the Touring Board, which I believe will give your "Subscriber" the information required.

F. H. ELLIOTT,
Secretary, A. A. A.

F. H. Elliott, Secretary, A. A. A.

Regarding the letter you received from the C. S. Warner Co., Niagara Falls, Canada, would say that the Warner people will bond an American car going into Canada for balance of the year 1907 for five dollars (\$5.00), and the Canadian license and markers to put on the car cost four dollars (\$4.00), so that the entire cost of passing in and out of Canada at will for the balance of this year is nine dollars (\$9.00), which is quite a substantial reduction from what it has been in the past.

FRANK B. HOWER,
Chairman, Touring Board, A. A. A.



LOCOMOBILE TYPE E, LIMOUSINE, 20-HORSEPOWER.

IN line with the policy followed by the American manufacturer to-day, the Locomobile Company of America, Bridgeport, Conn., announces the completion of its 1908 models as well as their readiness for the market, right on the heels of the closing of the 1907 season. The work of designing a new model, embodying the refined detail that the experience of the former year has suggested and the trying out of these new cars is no longer left to the close of the current manufacturing season, as was the case a few years ago. It is undertaken many months in advance, so that ever since last winter the work of building and delivering 1907 cars at the Locomobile factory has been carried on concurrently with the testing out of the 1908 models, which are now being turned out in number.

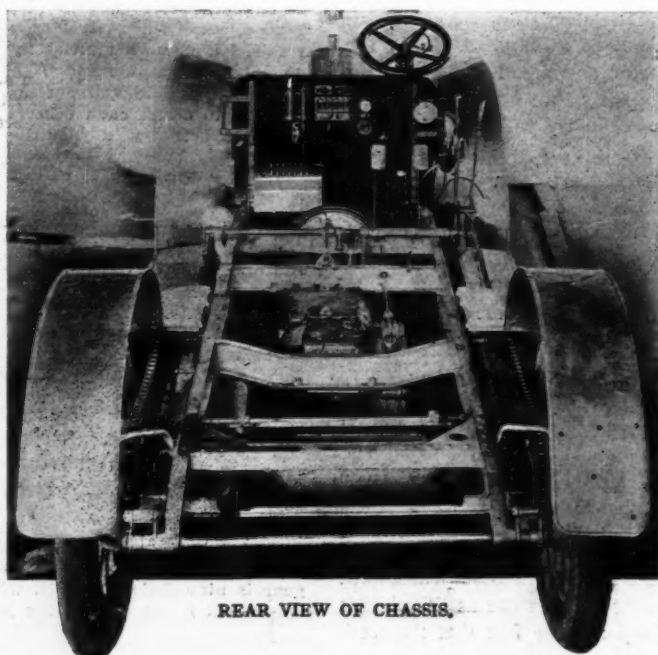
As has been the case in the past, there will be two Locomobiles for 1908, but so far as design, construction, materials and the like are concerned, both cars are practically identical. The smaller car will be known as Type E, and its rating will be the same as in previous years; that is, 20 horsepower, while the larger car, known as Type I, is equipped with a 40-horsepower motor. But, as already mentioned, the same distinctive features are common to both. While the attention of their builders is confined to these two chassis, either may be had as a runabout, touring car, limousine or landaulet, the smaller machine, Type E, also being furnished with a removable tonneau which is interchangeable with a rear deck carrying a rumble seat. All the fastenings consist of bolts and wing nuts, so that the transformation from touring car to runabout is very simple. When either type of body is in place, there is nothing to indicate that it is not permanently attached to the car, the nature of the fastening not being evident even upon inspection at close quarters.

The day when cars come forth each season in a new

guise have long since past, and now it is rather the maker who shows his faith in the system he has long adhered to by continuing it practically unchanged who begets the confidence of the purchaser, rather than the maker who is constantly striving for what are, after all, nothing more than talking points, in order to obtain public interest, so that it is now unusual to look for anything startling in the way of change on the new models of the old-established makers. Probably the greatest change to be found in the new Locomobiles is the adoption of a four-speed gear-set of the selective type on the smaller car, so that both are now uniform in this respect. A new feature of the engine is the use of a bronze plate covering a generous size opening in the cylinder heads. This communicates with the water jacket and it is designed to be utilized to give access to the latter for inspection and cleaning, the return connection of the circulating system being made through the plate. Other new features of the motor are to be found in the provision of flanges cast on the exhaust manifold, by means of which warm air is supplied to the carbureter. The latter, which is placed quite low down on the inlet

side, is practically the same as last year's model, but has been fitted with a new type of automatic air valve, while a flexible coupling has been placed on the pump-shaft to insure against binding, and facilitate the removal of the pump. The pump-shaft also carries a flange pulley for the fan-belt. To sum up, there are no sweeping changes in either model, the chief difference from the 1907 types being an increase of power on the Type I and the adoption of a four-speed gear of the selective type on the Type E in place of the three-speed progressive gear set formerly employed.

As already mentioned, both cars are so essentially alike, even in detail, that one description would apply equally well to both. The cylinders are cast in pairs and are mounted on a



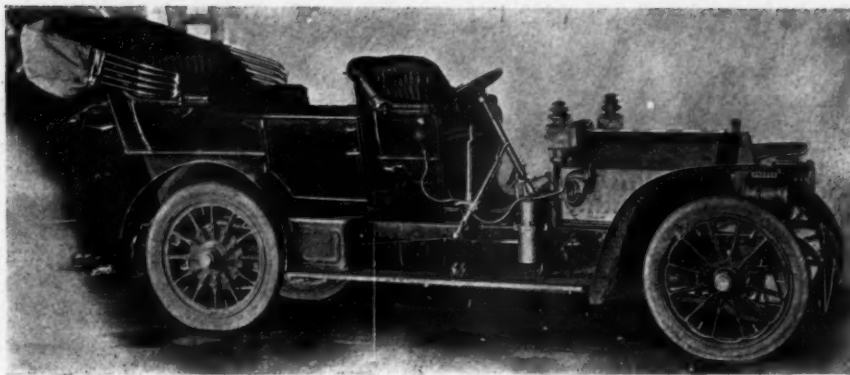
REAR VIEW OF CHASSIS.

manganese bronze crankcase—a peculiarity of construction which the builders of the Locomobile were among the first to adopt and to which they have consistently adhered ever since, as the heavier metal has given perfect satisfaction in service and the net increase in weight is practically a negligible factor owing to the smaller amount necessary.

The valves are oppositely disposed and mechanically operated, the cams and camshafts being made integral, while the inlet camshaft also carries the skew cams for the make and break igniters. These cams are laid out with a profile which enables the time of ignition to be altered by shifting the camshaft longitudinally, thus causing the trip-rods to lift sooner or later, as the case may be. All operating gears are forward and are thoroughly encased in a dustproof aluminum housing bolted directly to the front end of the crankcase. An extra pinion on the inlet camshaft serves to drive the magneto, while another on the exhaust camshaft drives the centrifugal pump situated opposite.

As has been the case for the past two or three years, the ignition is of the low-tension type and in the smaller car entire dependence is placed on the magneto. To facilitate starting the larger car a set of accumulators is provided as a part of the standard equipment. Compression relief cams are also employed on the large engine and are made integral with the exhaust cams. The centrifugal governor acting upon the throttle and arranged to be cut out by the pedal accelerator is also retained. The force feed lubricator, driven by a steel belt from the exhaust camshaft, is placed directly under the footboard and is located over a part of the exhaust pipe in order to receive the benefit of the heat from the latter, the usual sight feeds being placed on the dash. A hand pump is also provided, and on the large car, Type I, 14 pints of oil are carried in a tank hung from the frame and connected directly to the lubricator, so that no oil in cans need be carried.

Probably the painstaking thoroughness with which every detail



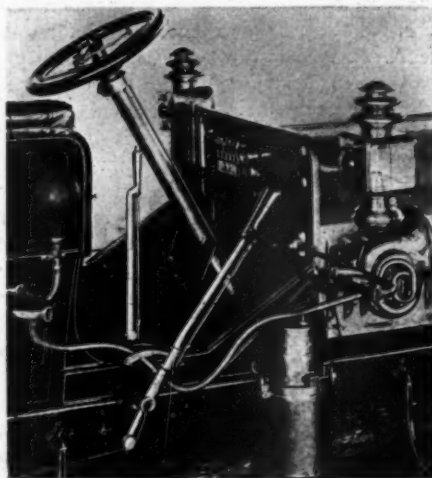
LOCOMOBILE TYPE I, STANDARD, 123-INCH WHEELBASE.

of the manufacture of the car is looked after by its builders may best be illustrated by the lengthy process through which the piston rings are put in finishing and which gives them a fit as close as that only obtained otherwise by quite a few miles of running. To effect this, after grinding the rings are placed in a holder in the same position as they oc-

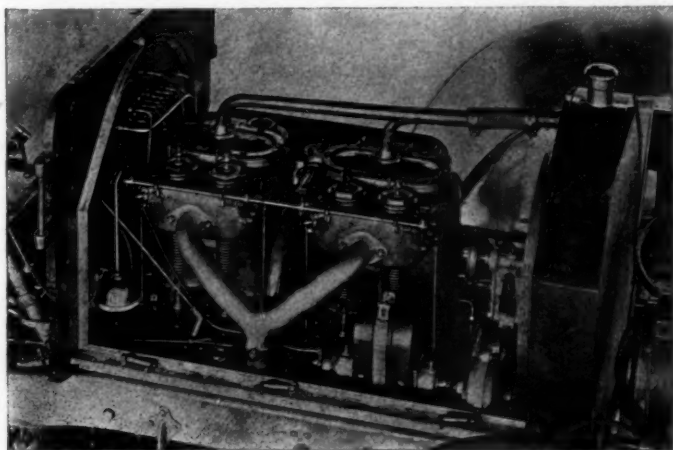
cupy on the piston, and this is then run in a cast-iron tube of exactly the same size as the engine cylinder, the running-in process being facilitated by the use of a little abrasive.

The clutch is of the standard conical type, faced with heavy leather backed by flat springs and having the spring-thrust self-contained when the clutch is engaged. The housing of the four-speed sliding transmission is of manganese bronze, with cover plate of aluminum alloy. All shafts run on Hess-Bright ball bearings, as is also the case with the differential, bevel drive and countershaft; the direct drive is on the fourth speed. The countershaft also carries a generous-sized drum for the running brake, while the emergency brake consists of drums bolted to the rear wheels and with which the driving sprockets are made integral. Both axles are single piece I-beam drop forgings. The steering gear is of the worm and sector type and the transverse rod is placed behind the front axle. The wheelbase of the smaller car is 102 inches, or 116 inches as a limousine, while the large car in the touring car has a 123-inch wheelbase. The frame construction is noteworthy in that the rear ends of the main pressed-steel frames are connected by a steel bar passing through openings in the forgings, the

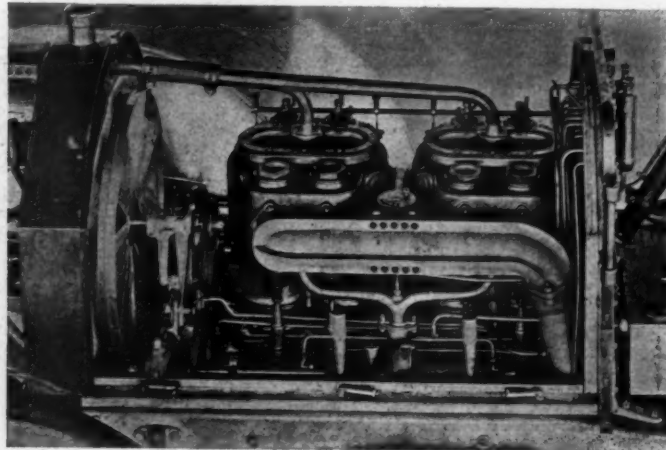
outer ends of these bars being utilized to carry the spring shackles. At the forward end of the frame is a dropped member or cradle designed to support the radiator so that the latter is not dependent upon either of the side members of the frame for support and is thus relieved of all torsional strains ordinarily set up by the latter. In accordance with modern practice the axis of the radiator and the front axle coincide, giving an excellent weight distribution.



OPERATING LEVERS AND DASH.



ADMISSION SIDE OF 40-HORSEPOWER LOCOMOBILE MOTOR.



SAME MOTOR AS VIEWED FROM THE EXHAUST SIDE.



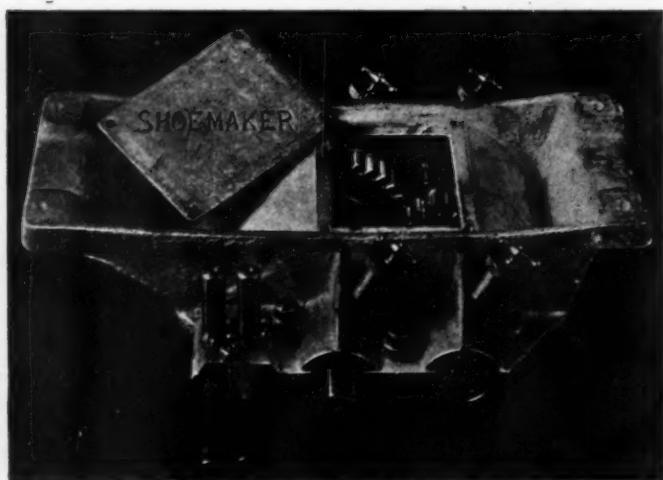
GENERAL VIEW OF THE CHASSIS OF THE NEW SHOEMAKER CAR.

It is quite evident that the makers of the new Shoemaker car, the Shoemaker Automobile Company, Freeport, Ill., are quite confident that it is capable of putting up as creditable a performance under the most strenuous conditions as are those of far older makes and well-established reputation, as its first bid for publicity is as an entrant in the gruelling tour of the A. A. A. for the Glidden Trophy, the wearied competitors in which reached New York yesterday. For the present the makers are devoting their entire attention to the manufacture of a single type known as Model C touring car.

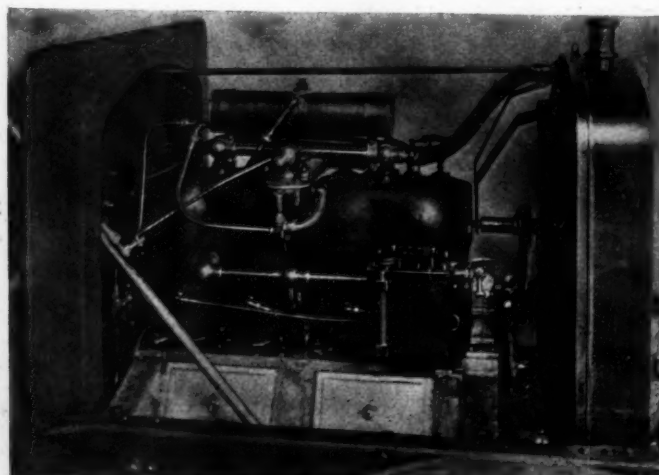
This is equipped with a four-cylinder motor of the standard type, the dimensions of which are 4 1-2-inch bore and 5 1-4-inch stroke, the rated output being 35-40 horsepower at a moderate normal speed. The valves are all placed on the same side and operated from the same camshaft. A noticeable departure is evident in connection with the carbureter, which is placed on a level with the top of the cylinders and is fed by gravity from an auxiliary gasoline tank placed over the motor—a feature that is of particular value in hill-climbing where a gravity system of fuel feed is employed, as it insures a constant supply to the carbureter regardless of the angle at which the car may be placed. The tank above the motor is fed by a positive plunger-pump, operated by an eccentric on the timer shaft, the pump being in communication with the main fuel tank low down at the rear of the chassis, while any excess from the carbureter itself is led directly back to this tank through a special overflow pipe. Ignition is of the high-tension type, the timer being mounted vertically directly over the flywheel and in front of the dash from which it is readily accessible by means of a removable panel placed in the latter. Lubrication

is by means of a Hill Precision oiler mounted alongside the motor while the cooling system consists of a vertical tubular radiator, the circulation being by means of a gear-driven pump, an eccentric being placed on the same shaft that drives the pump to operate the mechanical force feed oiler, while on the extreme front end of the same shaft a pulley is fixed to take the belt for the fan, this being the only accessory that is not gear driven.

The makers call particular attention to the change-speed gear, which is of the sliding type with selective form of operation, providing three speeds forward and the usual reverse, with a direct drive on the high speed. Chrome nickel steel of the highest grade is employed in all the pinions and their supporting shafts, which in turn are carried on 3 1-2-inch phosphor bronze bearings, lubricated by flooding with oil in addition to which four compression grease cups are provided, as shown in the illustration depicting the gear set and its housing. The pinions are of one-inch face and six pitch and are all thoroughly case-hardened. The cut gives some idea of the extreme of compactness the makers have attained in the design of this gear-set, which only measures 6 7-8 inches between bearings and tips the scales complete at but 55 pounds. A self-contained multiple disk clutch forms the connecting link between the change-speed gear and the motor, the latter being formed of an aluminum disk faced with cork inserts which is retained between two large cast-iron disks, supported by four substantial lugs screwed into the flywheel. The disk rotating with transmission shaft only weighs 5 1-2 pounds, thus eliminating the tendency to spin the latter and facilitating the movement of the gears. Final drive is by propeller shaft, designed to be practically a horizontal plane when running with a normal load in the car.



THE COMPACT GEAR-SET WITH ITS GREASE CUPS.



SHOWING AUXILIARY FUEL TANK AND CARBURETER.

HOT WEATHER ACTIVITIES OF THE AUTO CLUBS

Canadian Motoring League Becomes Active.

TORONTO, ONT., July 22.—At the last meeting of the board of directors of the Ontario Motor League it was decided to affiliate with the Royal Automobile Club of Great Britain. Official headquarters have been established in the Stair building, where the secretary will be permanently located. In connection with the office a touring bureau has been established, patterned after those maintained by American clubs, and a large file of road maps will be kept, other assistance also being rendered in the way of supplying information regarding customs and the like.

The league has adopted a comprehensive good roads policy, which, if approved by the Government, will mean the expenditure of a large sum on road improvement throughout Ontario, the plan simply being to petition the Government to grant one-half instead of one-third of the cost, as at present, under the Good Roads Act. Considerable has already been accomplished toward the betterment of the lake shore road between Toronto and Hamilton, and \$12,000 is now being raised to improve the worst stretch of six miles near here. Work was started a fortnight ago and is being pushed rapidly. The league has also completed its road guide of Canada, supplying reliable information covering 111 routes, all of which have been covered by a car in the preparation of the work.

The league has also found time to engage in other activities and last week supplied twenty-five cars for a charitable mission, by giving some seventy odd of the patients of the Home for Incurables a pleasant day's outing, the chief feature of which was a drive through High Park.

Minnesota Auto Association's Run to Mankato.

MINNEAPOLIS, MINN., July 22.—Seventeen machines participated in the first run of the season held under the auspices of the Minnesota Automobile Association, and every one of the cars came through with flying colors from the eighty-four mile trip to Mankato, which was unanimously voted a huge success by all concerned. It had been originally planned for a fortnight earlier, but was postponed owing to the bad condition of the roads. The sole object of the jaunt was the opening of the active campaign for good roads, which Minnesota autoists are now undertaking. On arriving at Mankato, the association members held a business meeting at which the subjects of good roads, signs, road maps, legislation and the holding of a race meet in connection with the Minnesota State Fair in September were discussed at length. It was voted to offer \$5,000 in prizes for the races, which will be divided into three general classes, for professionals, dealers and amateurs, in addition to which there will be three classes adopted from the American Automobile Association's horsepower standard instead of by a price limit. The star features will be a free-for-all at fifty miles and a twenty-five-mile event in three classes, for which a \$1,000 purse is to be hung up.

Bronxville Has a New Automobile Club.

NEW YORK, July 23.—As the result of the efforts of F. H. Elliott, secretary of the American Automobile Association, Bronxville, New York, now has an automobile club, which takes its title from the name of the town. H. Ward Leonard, one of the pioneer members of the Automobile Club of America, was elected president; Frederick P. Ackermann, vice-president, and Harry Burt, secretary and treasurer. J. J. Lannin, proprietor of the Gramatan Inn, was one of the organizers, and the new Bronxville Automobile Club will probably make its quarters temporarily at the inn. The club starts with quite a number of charter members, at least twenty-five of whom are at present owners of cars, while the remainder are prospective purchasers.

New York Auto Club Meets and Elects Officers.

A special meeting of the New York Automobile Club, until recently the City and Country Motor Club, was called at the town club headquarters, 306 West 109th street, on Thursday last, at which the following officers and directors were chosen for the ensuing year: Dr. Edgar T. Weed, president; Andrew J. Cobe, vice-president; James Stuart Blackton, treasurer; I. E. Roskam, secretary; directors, Commander U. J. Sears, U. S. N., Edwin Churchman, Bart G. Faulhaber, Samuel T. Myer, C. Ledgwick Levy, David C. Goodman, Conrad Hubert, Elbridge G. Snow, W. Woods, David J. Power, Samuel Steinfield and the officers.

A committee was appointed to make arrangements for a road run as well as several races for the Quinn trophy. Application has been made to Secretary Elliott for admission to the American Automobile Association, and also to the New York State Automobile Association. It is expected that favorable action will be taken on the former at the next meeting of the A. A. A.

Kansas Division, A. M. L., to Hold Meet on Labor Day.

LINDSBORG, KAN., July 22.—At the meeting of the executive committee of the Kansas Division of the American Motor League, recently held in Topeka, plans were made for the holding of the annual meet, which will take place at Lawrence, Kan., on Monday, September 2, Labor Day. The events will be confined to gymkhana "stunts" and probably a hill climb. The members present at the meeting were: A. E. Agrelius, Lindsborg, who is chief consul for Kansas; G. L. Knight, Lawrence; James G. Blaine, Pratt; George W. Crane, Arthur Capper and George W. Stansfield, Topeka. The Topeka and Kansas City divisions are expected to send at least fifty cars each to the races, and it is thought that with favorable weather there will be a representative gathering of autoists from all parts of the State.

A. C. of Germantown Holds Its Annual Meeting.

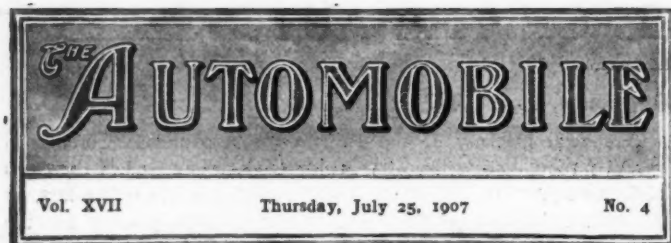
PHILADELPHIA, July 22.—At the annual meeting of the Automobile Club of Germantown last week the following officers were elected: Thomas B. Prosser, president; Charles H. Thompson, vice-president; Mark B. Reeves, secretary; Robert P. Hooper, treasurer. The following board of governors was also elected: John D. McIlhenny, S. B. Ferguson, William F. Helme, Prescott Adamson, Robert P. Hooper, Clarence B. Collier, Harry K. Duffus, Mark B. Reeves and G. Dunbar Shewell. President Prosser named the following finance committee: S. B. Ferguson, chairman; Charles H. Thompson, Clarence B. Collier and Robert P. Hooper. The club now has a membership of 162.

Clevelanders' Sealed Bonnet, Utility and Efficiency Trials.

CLEVELAND, O., July 22.—The Cleveland Automobile Club will hold a series of contests shortly, all of which will be run during the latter part of August. There will be a sealed bonnet contest for gasoline and steam machines, a utility test for commercial vehicles and an efficiency trial for electric cars. George H. Bowler will be in charge and data relating to these contests may be obtained by addressing him at the club. It is proposed to make a national event of these trials and numerous promises of entries have been received from all parts of the country.

Maryland Club Acquires Permanent Quarters.

CARONSVILLE, MD., July 22.—The recently organized Automobile and Driving Club of this city has just leased the Yearley property on Wilkins avenue for club purposes and will remodel the old mansion and improve the grounds, making an up-to-date clubhouse of the former.



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Successful Termination of the A. A. A.'s 1907 Tour. Whatever may be the decision of the judges in awarding the Glidden and Hower trophies, that of the competitors and of the industry at large must be to the effect that the event just closed has been the most successful of its kind. Were it not for the unfortunate mishap and its fatal termination that marked the second day of the run, there would not be a blemish to mar its success as a whole. Of course, there will be dissenting voices from this dictum, and such a state of affairs is inevitable. Circumstances are bound to arise that make it not alone expedient, but render it imperative, for those in charge to subordinate the personal convenience or individual welfare of some of the competitors to that of the general good, and, under the stress of trying to attend to every one of the thousand details that arise on such occasions, personal wants and personal appeals for aid may not receive that prompt and painstaking attention that the applicant generally thinks the dignity of his position warrants.

With the injustice of a fancied grievance rankling in their minds, it will naturally be impossible for some of the competitors to view the tour in the same impartial light as becomes the disinterested observer. That is, not at the present. Time wipes away the taint of petty annoyance, and then we are able to take a broader view of what was at the moment overshadowed by personal bias. And viewed from this standpoint, the tour must be conceded to have been a great success. Not that it was perfect, by any means; hotel accommodations might have been better, rules and regulations might have been improved, and there were a dozen

and one things that doubtless each one of the competitors thought he could have done better had he been in charge; but above all this stands out to the credit of those who did the work that it was carried out *far better* than it has been in any previous year, and as a result the 1907 tour marks a closer approach to the fulfillment of the purpose for which it was instituted than has previously been the case. Considered as a whole, the performance of the cars is highly creditable to the American automobile and the American industry.



Does Thirty-six Inches Represent the Wheel Limit?

It is now a little more than two years since the tire-maker succeeded in convincing the automobile manufacturer and the autoing public in general that large wheels were of necessity the first step toward the solution of the tire problem, which was at that time far more pressing than it has been since, due to the adoption of the suggestion of those who were in an excellent position to know. In fact, the advance in size has been so general that it is not difficult to determine a car's age by the size of its wheels, few of the heavier cars now carrying anything less than 36-inch rolling supports, while there has been an almost universal advance to 34 inches on the part of the makers of lighter cars. The change has been so uniform that the question naturally arises: Is 36 inches the limit in this direction? and it is rather apropos at the moment, in view of the announcement by its maker that one of the low-priced two-cylinder cars for 1908 is fitted with 36-inch wheels.

The man who pays a high price for his machine looks for features that are lacking on lower-priced constructions, and the maker usually responds to this demand. Will this alone be sufficient incentive for the builders of expensive cars to make a still further increase in wheel sizes? The question is wholly one of cost. Rubber costs more to-day than it ever did, and skilled labor is still an expensive commodity, while the increase in the cost of making such tires would probably not be entirely proportionate to the difference in size, but would be apt to be greater. With the greatly increased manufacturing costs that characterize the production of the modern automobile, due to the vastly better grade of materials used in its construction, there can be little doubt that the manufacturer is not anxiously seeking means to cut down his profits by the adoption of such a substantial percentage of increased cost as would be involved in tires of a larger size, say 38 inches. There is another equally important side to the question: Would the autoist care to foot the bills for replacing such tires and deem himself better off in the end, in view of the improved service they would render?



New Jersey Repudiates the Vanderbilt Race.

With characteristic short-sightedness the aptly-named "foreign land" on the west bank of the Hudson has decided that it will have none of automobile racing. The bill rushed through the lower house is constitutionally defective and Governor Stokes, who has had his ear to the ground since first lending enthusiastic support to the proposed holding of the Vanderbilt Cup Race, has detected an ominous rumble, and now says nay most emphatically—he never even thought of such a thing.

Through his own carelessness one of Jersey's citizens met his death on Long Island last year. The spectators were so utterly oblivious to their own safety that the marvel is more did not meet the same fate. But that says nothing against automobile road-racing, which as a sport has proved not a whit more dangerous than many another. Scores of people have met their deaths watching a well-ordered baseball game, but on one has denounced it as a crime against society, and the same is true of yacht racing, which can show a long list of fatalities. New Jersey has distinguished itself in other ways by its mediæval attempts to repress the automobile, so that the spirit manifested on the present occasion is not surprising, while the Jersey conception of a racing car as a man-eating monster is ludicrous.

BOSTON AUTOISTS TO CELEBRATE HOME WEEK.

BOSTON, July 20.—The executive committee of local automobilists, which is in charge of the automobile features of Boston's Old Home week celebration, July 28 to August 3, has about completed the program for "Automobile Day," which will be Thursday, August 1. Circulars will shortly be sent out to the automobilists of the city and vicinity asking them to participate in the automobile tournament, which will include a parade through the streets of the city and gymkhana events on Boston Common.

When the subject was first broached it was suggested that a road race or a hill climb, or both, would be interesting to the visitors as well as the inhabitants of the city. Owing to the great crowds that are expected the committee at once discarded the race proposition. The hill climb was also abandoned on account of the crowds, and because no suitable hill is available within easy reach of the center of the city. All efforts, therefore, will be concentrated upon the parade and the gymkhana games. J. H. MacAlman, manager of the Columbia branch, and president of the Dealers' Association, is chairman of the parade committee, while K. M. Blake, manager of the Locomobile branch, is chairman of the committee on Gymkhana games; F. A. Hinchcliffe, of the Winton branch, is treasurer of the executive committee, and Chester I. Campbell is chairman.

Those in general charge of the Old Home week celebration appropriated \$1,000 for the use of the committee, and with this money prizes will be purchased which will be awarded both to parade and to Gymkhana contestants. In the parade five prizes will be offered as follows: for the best appointed touring car, the best appointed runabout, the best appointed car driven by a lady with lady passengers, the best decorated car and the most grotesque car. The parade will be a short one, and, though the route has not been decided upon, probably will cover some of the down-town streets as well as Back Bay and park roads. It will assemble about 11 o'clock A.M. Thursday, and will finish at the Common in time for the Gymkhana events.

In the gymkhana events, which will be of the usual order of such sports, prizes will be offered. In both parade and gymkhana every effort is being made to interest private owners, so that there will be a large number of entries. It is hoped to make the parade the largest ever held in New England, if not in the country. The committee points out that the parade gives an excellent opportunity to show the extent of the local industry.

MADISON, CONN., STARTS A TRAPPING GAME.

"Kindly warn your readers that a trap is being maintained in Madison to catch the unwary," writes Walter S. Schutz, one of the Hartford attorneys who was largely responsible for the new Connecticut law recently enacted. "I defended one case there last Saturday, and though the evidence of the prosecution was extremely slim, my client was convicted and fined \$50 and costs. An appeal has been taken to the Superior Court, and we mean to see it through. Several courses purporting to be 1,400 feet in length have been measured off in the town, and the local constables and similar highwaymen are stationed behind stone walls on Sundays and holidays, ready to trap anyone who goes more than twenty miles an hour."

CHICAGO TO HAVE ANOTHER TWENTY-FOUR.

CHICAGO, July 22.—Walter White's challenge to C. A. Coey, winner of the recent 24-hour race at the Harlem track, for a similar event between a White steamer and Coey's Thomas, having been accepted, Labor Day will see a repetition of the round-the-clock grind that was part of the entertainment planned for the A. A. A. tourists. The event is to be started at 5 P.M. Sunday in order to finish at the same time on Labor Day, and it is said Coey will wager \$2,000 on his chances, while the backers of the White will post a side bet of \$1,000 on the result. The course will be specially prepared for the star event which will be preceded and followed by short distance races.

QUAKER CLUB TO SUPPRESS BUCOLIC GRAFTING.

PHILADELPHIA, July 22.—Driven to desperation by the high-handed manner in which the rural authorities are mulcting good and bad alike, the Quaker City Motor Club has undertaken an active campaign for the suppression of this type of blackmail and intends to put an effective quietus upon it. Headquarters have been established at the Hotel Majestic, and immediately upon traps being reported warning signs are posted. The victims of hold-ups are urged to refuse to pay fines, even at some personal inconvenience, the cases being defended by the club's attorneys. The Pennsylvania law requires the horn to be sounded at all crossroads and an alleged failure to do so is now the most usual pretext on which parties are apprehended, as the majority now very disobligingly refuse to drive fast through the traps. The club has issued instructions in which autoists are warned to keep within the 20-mile limit and to sound the horn at the slightest provocation, winding up with "when arrested, turn your case over to the club's attorneys."

Interesting developments have also taken place recently in the toll road situation. The Montgomery pike parallels the Lancaster pike, and the former has been collecting but three cents a mile to the latter's five, so that the former decided to get some of the easy money, and jumped the rate from the city line to Bryn Mawr from 15 to 34 cents for a touring car, the Lancaster rate being 26 cents. But local autoists who know all the ins and outs have stirred themselves to activity by publishing maps in all the local dailies, showing how the majority of the toll gates can be circumvented, and the toll roads are taking in less money than ever.

PLACING A BAN ON THE RECKLESS DRIVER.

BOSTON, July 20.—The Safe Roads Automobile Association, an organization recently formed in this city for the purpose of preventing the improper use of automobiles and prosecuting reckless drivers and those who do not obey the law and the rules of the road, is conducting a very active campaign, and has already made its influence felt by securing the revocation of several licenses and registrations by the Highway Commission. The Association is composed largely of private owners of automobiles, and it employs agents whose duty it is to investigate cases of reckless driving that may come to the attention of the association, collect evidence, and prosecute the cases. The association justifies its existence by pointing out that in a period of twenty-six days ending July 10, there were ninety-two accidents in Massachusetts in which automobiles were involved; forty-three pedestrians were injured, and there were forty-nine collisions between automobiles. Nine people have been killed and thirty-four injured. To aid in its work the association has just made an offer of \$50 reward for evidence which shall lead to a conviction in cases of infraction of the automobile law.

ALGONQUIN HILL-CLIMB SET FOR AUGUST 9.

CHICAGO, July 22.—Owing to the fact that the tour of the American Automobile Association for the Glidden trophy interfered with the date originally set for the annual hill climb of the Chicago Motor Club and the Chicago Automobile Trade Association, it has been postponed until Friday, August 9, on which date it will be contested at Algonquin, Ill. This action was taken at a meeting of the committee, consisting of Charles P. Root, F. W. Cornish, H. P. Branstetter, B. C. Buxton and J. V. Lawrence.

One more event was added, a free-for-all, which will allow of the competition of steamers. The basis of classification also was changed. The cars will be classified according to piston area instead of price. In the first five events only gasoline cars will contest.

In the free-for-all the winner will be the car making the fastest time, but in the other events the cylinder capacity of the car, multiplied by the time in seconds, divided by the weight of car with driver, will be the basis of competition, this rating having been adopted with a view to reaching a more equitable result.

BROOKLANDS MEET PROVIDES TAME SPORT.

LONDON, July 8.—The first race meet at Brooklands has hardly proved the big success anticipated and big alterations will have to be made in future events to sustain public interest. All the elements of success were present at Saturday's meeting—a representative collection of cars, good weather and a perfect track—but the easy wins together with the withholding of times in order to enable the committee to frame future handicaps greatly bored the spectators once the novelty had worn off. The attendance was itself below expectations. But 14,000 turned up for this opening meet, and it will be necessary for this to be increased in future if the track is to pay. The members' and £1 inclosure contained a select gathering of society notabilities and no less an accession to the sport of motor racing was to be found in the humble half-crown section, where the horsy betting men warily laid the odds against the favorites.

The very magnitude of the track prevents success from a spectacular point of view; it is impossible to see the whole run distinctly, and if close sight of the fast swing round the banked curves is desired, view cannot then be had of the finishing straight. Add to this complaint the fact that the cars were insufficiently numbered and that the vari-colored umbrella coats of the drivers—in most approved jockey style—proved impossible of easy recognition, and it will be seen that the universal grumble was well justified. Unofficial timing on Saturday showed that speeds of well over ninety miles an hour were reached, yet at no time did the apparent gait reach a mile-a-minute standard—to such an extent did the huge size of the track dwarf speed by comparison with the flying spots on it.

The first race failed to arouse much excitement, after two preliminary heats the final of the Marcel Renault Memorial Plate of £550 being won by the 40-horsepower Napier. Excitement was soon warmed up in the 15-mile run for the Gottlieb Daimler Memorial Plate of £650, the limiting engine dimensions being 120 to 135, based on the new formula adopted by the Royal Automobile Club recently. The two Daimlers had an easy run for first and third places, Huntley Walker coming second on a Darracq after three of the other competitors had been eliminated by accidents, including a broken valve on the Minerva, water shortage on the Napier and a loose bonnet that flooded Sangster's face with oil on the Ariel. The excitement aroused by this event culminated with a magnificent finish of the race for the Byfleet Plate of £550. Before half of the ten miles had been covered, the race resolved itself into a neck-and-neck contest between Jarrott's De Dietrich racer and the stripped Napier driven by Newton. For the whole of a three-mile lap the two cars remained wheel to wheel until the finishing straight was reached. Jarrott gained about ten yards, but when just on the line the Napier seemed to make a leap forward and the judges gave the result as a dead heat, rather an unexpected decision for such a high-speed event. Huntley Walker came in third on another of his innumerable Darracqs.

For the Montague cup for the high stake of £2,100 both Nazzaro and Duray were booked to appear and their absence caused much disappointment. Hutton's 120 Mercedes was placed first, with Okura, a Japanese motorist, second on a 100-horsepower Fiat. The final event was run on a price basis, cars listed at £600 to £700 racing for the Stephenson cup over a distance of two laps or six miles. Huntley Walker's Darracq this time managed to come in first with the Marquis de Saint Mars at the wheel; Sangster's Ariel took second place.

ONTARIO TOWN TO HAVE A 'BUS LINE.

STRATFORD, ONT., July 22.—A project to operate an automobile 'bus service here is already well developed. Three cars will be employed for passenger service, each having a carrying capacity of 12 to 20 passengers, and will be run regularly for a five-cent fare over any part of their route. Other cars will be employed to carry factory operatives to and from the plants in the suburbs, and will be rented during the afternoons for parties.

LONGMEADOW A FIT SUCCESSOR FOR LEICESTER.

SPRINGFIELD, MASS., July 22.—It would appear as if the mantle shed by Barber Quinn, of Leicester, who made the name of that town a stench in the nostrils of autoists throughout the East, has fallen upon the shoulders of one Henrattie, an ex-brakeman of a freight train who was recently appointed a special officer at Longmeadow, a hamlet just to the south of here. With the usual equipment of a cheap stop-watch he has marked out an appropriate scene of operations and is hard at work. His prey is haled to the Springfield police court and it is said that the records show no instance of an acquittal, despite the fact that this modern Dick Turpin has testified to performing such fantastic tricks as catching an automobile by "jumping onto the rear hub and from there to the running-board" while it was going 34 miles an hour, bearing witness to such performances with no little pride. A Springfield autoist has offered \$50 for a repetition of the performance provided he be not saddled with funeral or other incidental expenses, but there has been no attempt to lift the purse so far.

The Springfield Automobile Association posted a number of warning signs, but the selectmen did not appreciate this interference with the business of trapping and had them removed, beside publicly approving of the conduct of their chief trapper, stating that they are "pleased with the officer's success." The matter is assuming the proportions of a public scandal, for, in addition to the marvelous feats of the man who can keep his eye on a car and the stop watch at the same time, snap the latter when the car passes and then sprint after it, the action of the police judges is far worse, as they fine defendants even when the latter testify to having been warned of the trap and were going slowly, beside which they are subjected to abuse and vituperation by the attorneys for the prosecution in their cross-examination.

TOLEDO AND VICINITY IN A BROIL.

TOLEDO, O., July 22.—This town is in a state bordering on anarchy where automobile laws are concerned and the city council is in a quandary. Not long ago the special motorcycle policemen detailed to see that the mile-in-six-minutes ordinance was not violated reported that it was impossible to do so unless every machine carried a license tag. The council moved, passed the required ordinance and purchased 500 tags. There were not enough to go round by several hundred, so that the law cannot be enforced any better now than before, and considerable red tape must be unwound before the remaining tags can be provided. The situation is further complicated by the practice some have started of turning the tags upside down, and several are said to have escaped arrest in this way. Another law provides against the driving of cars by persons under 15 years of age, but it is a dead letter and is violated daily.

Outside of Toledo the farmers appear to have declared open war on the automobile, their hatred taking the form of dangerous obstructions, log barriers and the like placed in dark spots on the roads, which have resulted in numerous accidents and frequent narrow escapes. It is little short of marvelous that no fatalities have been reported on this account, as the barriers have been placed with every evidence of the most diabolic ingenuity in concealing them that could be expected of a train wrecker.

DALLAS THINKS EIGHT MILES FAST ENOUGH.

DALLAS, TEX., July 20.—This city is being governed by a commission nowadays in place of its former mayor and council, and in order to demonstrate to the new governing body just what traveling at eight miles an hour in an automobile means, all five of the commissioners were taken riding by autoists recently, the purpose also being to demonstrate the poor condition of the streets, which are extremely hard on a car.

But the trial did not have the desired effect, as after it was over Commissioner Doran observed, "I believe eight miles an hour downtown, and a little faster possibly out in thinly settled and traveled streets would be about right for the speed limit."

PUTTING MASSACHUSETTS' LAW INTO EFFECT.

BOSTON, July 22.—The Massachusetts Highway Commission this week enters upon the arduous task of reregistering all of the automobiles in the State in accordance with the law passed by the last Legislature. This provides that the registrations of all automobiles in the State shall expire on August 1, and that to renew them until January 1, 1908, shall cost \$5, and that the registration fee thereafter shall be \$5 annually for automobiles and \$2 for motor cycles. It is estimated that there are in use something like 15,000 automobiles and 500 motor cycles, and to reregister all these the Highway Commission has been obliged to secure a much larger force of clerks, and will go to an expense estimated roughly at \$5,000 during the next two or three weeks.

The individual owners will be inconvenienced as little as possible, as they will be permitted to retain their old number plates and registration numbers. Each owner of a car will receive a bundle of documents from the commission. These he is expected to read, and there are also blanks for him to fill in. The blanks are to be returned to the Commission with the amount of the fee, and a new certificate of registration will then be issued. The work probably will not be finished until after August 1, so the commission is trusting to the discretion of the police in holding up cars for a week or two.

It is estimated that the registration this summer will bring in to the State's coffers a total of \$84,000 in fees, and on January 1 next there will be another \$84,000 or more, providing \$168,000 as a road fund. Three-fourths of this is to go for State roads and the other fourth for the upkeep of the parkways and boulevards of the Metropolitan Park Commission.

CONTINENTAL CLUBS TO ADOPT RULES.

PARIS, July 16.—With a view to coming to some agreement regarding a standard code of regulations to govern automobile racing all over the world, representatives of English, French, American, Dutch, Belgian, Austrian, Italian, Swiss, Hungarian and German clubs are to meet at Ostend to-day. Some of the delegations have made known in advance the stand they wish to advocate, Italy favoring the elimination of a horsepower standard and desiring the privilege of optional weights. A difference of opinion exists between the general committee and the racing committee of the A. C. F., the former favoring four-cylinder cars having a minimum bore of 160 mm. and a minimum weight of 1,108 kilos, while Marquis De Dion, of the racing committee, who is one of the delegates, proposes a minimum weight of 1,300 kilos and a minimum fuel consumption of 20 liters per 100 kilometers.

GERMANY TO INSTITUTE A NEW CLASSIC.

LONDON, July 16.—As is well known, the rules under which the Herkomer Trophy is competed for call for the holding of that event in England for the next three years, so that there is already considerable talk in German automobiling circles of instituting another event to be held at home next year. Nothing definite has come to light as yet, but it is reported that Prince Henry of Prussia will donate a trophy and the event will be placed on an international basis, part of the route being laid in Austria. Miss Dorothy Levitt, who received a gold plaque for her driving in the last Herkomer tour, expects to give an exhibition of her skill on the Florida beach next winter. According to present reports, the running of the tour this year shows a substantial profit.

MOTOR BOAT RACE FOR THE COUPE DE PARIS.

PARIS, July 21.—The high speed attained by the gliding boats was the feature of the "Paris à la mer" motorboat race, which started from Auteuil bridge this morning. The race to Suresnes lock for the Coupe de Paris was easily won by the Panhard-Tellier, the Rapiere being second and the Lorraine-Dietrich third. Fournier handled the Itala II. and Perignon steered the Dietrich.

NEW BOOKS PERTAINING TO AUTOMOBILING.

Motoring in Fiction.—A new automobile romance by C. N. and A. M. Williamson, has appeared in the July issue of *Lippincott's Magazine*. It is entitled, "He Who Stole and Rode Away." The hero, Captain Laurence O'Hagen, late of the British army, finds himself in such an extraordinary position that he is obliged to run away with another man's automobile. The heroine is Mona Eversleigh, a young heiress whom a pair of titled Australians are seeking to entrap into a marriage whereby they can get control of her fortune. It is the kind of story in which there is "something doing" on every page.

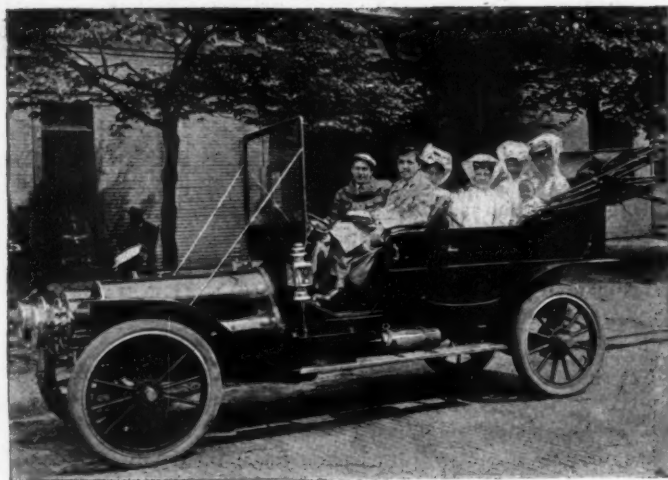
Touring Club of Italy's Road Book.—Remarkably good work is being done by the Touring Club of Italy in the publication of information on touring conditions in that country, the efforts of the past few years having made Italy only second to France for convenient touring. In their *Annuario dell' Automobilismo*, 1907, just published, the tourist has a complete guide in Italian to regulations, laws, taxes and routes in Italy and a number of other European countries. The new volume contains maps of all the race circuits in Europe, with large colored maps showing how to reach them from distant points. The book, which has more than seven hundred pages, is published by the Touring Club of Italy, 14, Via Monte Napoleone, Milan.

A Book of Foreign Wanderings.—Francis Miltoun's "The Automoblist Abroad," just from the press of L. C. Page & Company, Boston, will please in proportion as the reader has become imbued with the dilettante automobile spirit. Certainly the speed maniac who retires disgusted when road or mechanical conditions prevent the addition of another figure to his best record will have little sympathy with the work; nor is the inquisitive statistical and historical-bloated traveler likely to find the tone altogether sympathetic. But the man who experiences a real joy in studying the moods of an engine, who can appreciate good roads and take bad ones stoically when they come, who likes to linger over well-supplied tables and sip the best wines of the country of his temporary adoption will find the perusal of the book a real pleasure.

Abroad to Francis Miltoun practically means France—the Elysium of the motorist. Through smiling Touraine, around romantic Carcassonne, the wildness of the Pyrenees, in Languedoc and Old Provence, along the banks of the turgid Rhone, or through the more sober but no less interesting Seine and Oise, the writer leads his guests, picking out resting places that he would fain never leave, giving pictures of old world customs untarnished by modernity and supplying useful touring hints as far removed from the stereotyped guide book as it is possible to imagine. The land of dykes and windmills, the roads by the Rhine, the stretches of pavé in Flanders, as well as that cyclist-auto pilgrimage from Land's End to John O'Groats form a part of the travels of the automoblist abroad; but it is evident that Francis Miltoun is more at home in the land of the tricolor, and whenever absent hankers after its unique conditions. There are interesting chats on an "Appreciation of the Automobile," "Roads and Routes," "Hotels and Things." A number of colored plates and half-tone illustrations embellish the volume.

AN ECHO OF ORPHANS' DAY FROM THE WEST.

SPRINGFIELD, ILL., July 22.—The Sangamo Club of this city may have been somewhat belated in celebrating orphans' day, but the fifty-three waifs from the local Home for the Friendless who were given the treat lost nothing by waiting, as the aristocratic members of the club did the thing up in style. They were given a ride about the city in the cars, then taken to the Country Club, where they were feasted, topping the good time off with a visit to the White City. Twelve cars were in the procession and part of the route lay through Washington Park.



AN OHIO FRANKLIN AGENT AND HIS SIX-CYLINDER CAR.

In the tonneau are Chief Justice Day's daughter and son, Mrs. James Kimbark, wife of the treasurer of the Timken Roller-Bearing Axle Company, Miss Daisy Trout, and Mrs. R. J. Diebold. In the front are R. J. Diebold, the Canton, O., agent for the Franklin, and Dilbert Warder, driver for H. H. Timken.

HOT WEATHER NEWS FROM THE QUAKER CITY.

PHILADELPHIA, July 22.—As chairman of the contest committee of the Quaker City Motor Club, E. C. Johnson is very well known locally, but it was through his assistant managership of the local White branch house that he had attained fame. Indeed, Johnson and White had become synonymous terms. Imagine the surprise of the local automobile world last week when the announcement was made that Johnson had renounced steam and all its works and had taken up gasoline as exemplified by the Keystone Motor Car Company, which handles the Packard here. The same company also represents the Buick locally, and has secured "Eddie" Wilkie, formerly of the Spencer-Wilkie Company, to take care of that branch of its business.

Four business days were practically chopped out of the calendar of the "Row" establishments last week. The big reunion of the Elks and the parades through the Court of Honor in front of their places of business drew such crowds that the police officials ordered vehicles of all kinds off Broad street from 7 A. M. to 11 P. M., much to the detriment of demonstrations. Many of the dealers returned good for evil by loaning one or more cars to the Elks Entertainment Committee for the entire week. These machines were used mainly for sightseeing tours.

Oshkosh, Wis.—Preparations have commenced for the erection of a modern garage for the Krueger Automobile Company on Jefferson avenue and Merritt street. Dimensions are 112 by 55 feet, the building to consist of three stories.

A PROSPEROUS SEASON FOR DETROIT'S TRADE.

DETROIT, MICH., July 22.—That the present season has been the most successful in the history of the industry for Detroit and Michigan makers of automobiles and accessories is universally conceded. Backward weather and the slump in Wall Street had a tendency for a time to beget pessimism, but the clouds have rolled away and a glance back over the past twelve months indicates a gratifying condition of affairs.

A careful canvass discloses some interesting facts regarding the growth of the industry and the imposing proportions attained. During the season practically closed there were made in twenty factories in Detroit and Michigan not less than 21,500 automobiles, ranging all the way from runabouts to five-ton trucks, although the commercial vehicles cut a small figure numerically. The selling value of these cars on a conservative basis totals, approximately, \$32,000,000.

Of this number Detroit produced more than 12,000, the rest being divided among seven factories throughout the State. The total value of Detroit's production was \$17,000,000 or approximately 60 per cent.

One year ago there were engaged in Detroit factories devoted exclusively to the manufacture of automobiles 3,500 skilled mechanics. Within the past twelve months this number has been increased to 5,000. Just how many are employed in the factories outside of Detroit cannot be determined, but they number thousands. On a conservative estimate, not less than \$10,000 is paid out daily in wages to toolers in Detroit auto factories.

But this is only part of the story. Detroit is recognized as one of the greatest centers in the country for makers of parts and accessories. In this line, including the production of tires, of itself an item of importance, not less than 5,000 persons are employed. Taking the same average wage as prevails in the automobile industry, it will be seen that another \$10,000 is disbursed daily. Combining these two, \$20,000 is put into circulation in wages alone every day during the busy season, and this means practically the entire twelve months just closed. Added to this is the amount paid out for similar purposes in factories outside of Detroit, bringing the total for the year in wages alone well up toward the ten million mark.

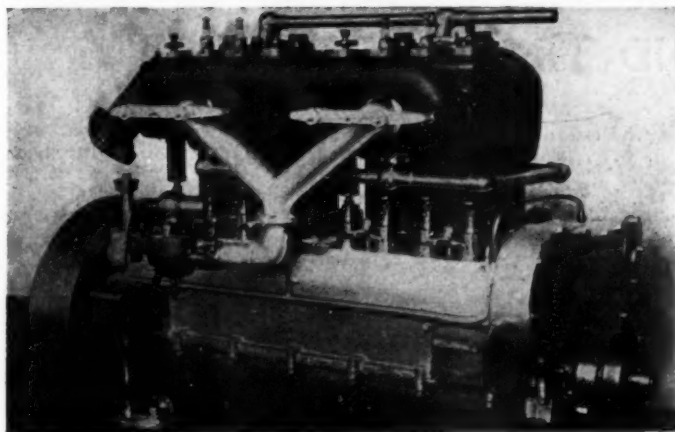
It is interesting to note that three concerns produced more than one-half Detroit's entire output, three more out in the State furnishing 80 per cent. of the 9,500 contributed by the State.

At least four Detroit concerns did an aggregate business in excess of a million dollars, two approaching the \$5,000,000 mark. Five out of seven scattered through Michigan also exceeded the million dollar mark, one reaching \$5,000,000 and two others getting past \$3,000,000.

With the tag ends of last year's business out of the way, most of the local concerns are already busy with plans for the coming season. The Packard Company has had its 1908 model out for some time, and several others are nearing completion, everything pointing to an earlier start than has been customary in the past.



THE CLUBHOUSE AT DEL MONTE, CAL., ON THE OCCASION OF THE SECOND ANNUAL LUNCHEON AT THE RECENT MITCHELL MEET.



INLET SIDE OF THE NEW WAUKESHA MOTOR.

NEW MODELS OF WAUKESHA MOTORS FOR 1908.

In bringing out its line of motors for the season of 1908, the Waukesha Motor Company, Waukesha, Wis., have made a self-contained system of lubrication a feature of the $4\frac{1}{2} \times 5$ and the $4\frac{3}{4} \times 5$ -inch sizes, in response to the general demand. These motors are of the well-known Renault type, and embody all the best features of design consistent with practical simplicity. The cylinders are cast in pairs with all the valves on one side, while the cooling-water circulation enters just below the valves and leaves through a brass manifold running along the top of the cylinder heads, the valves thus being amply water-jacketed. The cylinders are ground to exact size, and the pistons, of the same grade of iron as the cylinders, are provided with four compression rings, split diagonally and ground to 4-1000 undersize at the bottom and 6-1000 at the top. The brass water pump is of the centrifugal type and is driven from the same shaft as the magneto, while a timer for battery ignition is placed vertically at the flywheel end of the motor and driven by the camshaft through hardened steel miter gears, encased and running in oil.

From the same shaft a small oil pump, forming the chief feature of the lubricating system, is driven, oil being constantly pumped from an oil-well below the crankcase to the main bearings and cylinders, thence draining to the crankcase oil-pan, where it is utilized for splash lubrication, constant-level drain holes being provided to take care of any excess and conducting the latter directly back to the special oil chamber beneath. A straining and filtering device is fitted between the pump and crankcase, and is easily removable for cleaning, while the pump itself and the small amount of piping necessary are both on the outside of the crankcase in an accessible position, so that the system is extremely simple and reliable, it only being necessary to maintain the supply in the oil chamber. High-tension ignition is employed, the valve-chamber plugs being tapped for standard $\frac{1}{2}$ -inch plugs, while provision is made for any standard magneto.

From the foregoing, as well as the following specifications, it will be evident that the design of these motors is the result of long experience in this field and that nothing has been omitted to make them represent as close-cut and compact unit power plants as are obtainable on the market. Both the connecting rods and the crankshaft are drop forgings, the latter being of .45 per cent. carbon steel, while the split bearings of the former are bushed with Parson's white bronze, the dimensions of these main bearings being $1\frac{3}{4}$ inches in diameter by 3 inches in length. The piston pin is hollow, and measures $1\frac{1}{4}$ inches in diameter externally and $\frac{3}{4}$ inch internally. It is hardened and ground, and gives 4 square inches of bearing surface on the piston lugs. The crankshaft is offset 1 inch from the axis of the cylinders, and it is forged integral with a flange to take the flywheel, the latter being finished all over and assembled with the crankshaft. All the connecting rods and all the pistons are made of exactly the same weight, thus giving perfect mechanical balance.

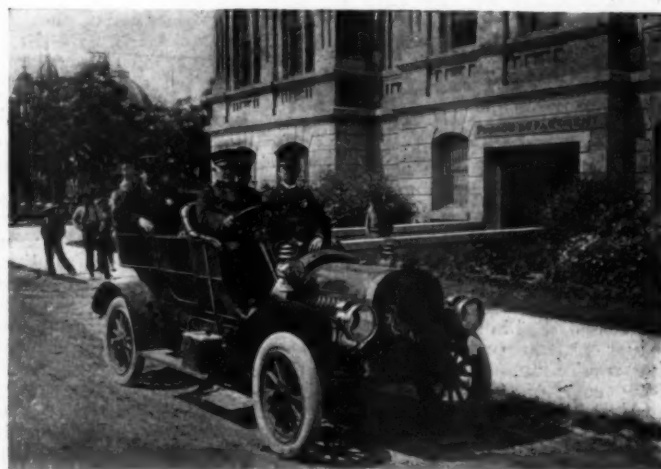
KNOX COMPANY TO INCREASE ITS CAPITAL.

SPRINGFIELD, MASS., July 22.—As a preliminary step in a plan looking to an increase in the capital of the Knox Automobile Company, and as a means of forestalling any ill-advised or hasty action by a large creditor, the latter to-day made a voluntary assignment for the benefit of its creditors, Alfred N. Mayo being appointed trustee. The position of the company and its reasons for taking the step are fully explained in the statement made public by President E. H. Cutler, which is as follows:

The Knox Automobile Company, having found itself embarrassed by lack of ready money and having consulted some of its larger creditors, has upon their recommendation made an assignment for the benefit of all creditors to Alfred N. Mayo, of Springfield, and it is expected the company will continue its business by securing additional working capital. The company has this year done an increased and profitable business, and its product is remarkably successful. The difficulty is due largely to the fact that the capital is too small to handle the large business under present conditions. The inventory just taken shows that the assets are nearly double the liabilities, and sales this year have been larger than the previous year, but, owing to the exceptionally bad spring weather, they have been smaller than was expected. With a splendid car, increasing business and a surplus, together with a reputation for good workmanship and fair dealing which has earned the goodwill of both its customers and creditors, it would seem that the plans already on foot for reorganization with largely increased capital cannot fail to succeed and that there will be practically no interruption of business.

FIRST RAMBLER MODELS FOR 1908.

Soon the whole fleet of new Ramblers of all sizes and types for 1908 will be in the hands of the Rambler agents and branch houses, the Model 31, which is the two-cylinder representative, or at least one of them for 1908, being the first to put in an appearance. The differences between it and Model 21, which was its 1907 predecessor, are slight. The controlling devices are now placed over the steering wheel in response to the general demand, the forward portion of the footboard has been given more of a slant and the rake of the steering wheel has been increased somewhat, while the pedals are so arranged that there is no possibility of dirt finding its way through the floor. The most important change is to be found in the adoption of 36-inch wheels, shod with 3 1-2-inch tires front and rear, the power plant being practically identical with this year's machine, except for a slight improvement in the valve-operating mechanism. Though the new model has been put through the usual thorough testing-out process, H. M. Vale, the Rambler representative at Beloit, Wis., will drive one of the new cars about a thousand miles through lower Wisconsin.



A RAMBLER IN THE SAN JOSE, CAL., POLICE SERVICE.

Realizing the value of the automobile as an aid to the maintenance of proper police service, the municipality of San Jose, Cal., placed an order for a Rambler Model 31 with F. H. Bush, the local agent. The accompanying photograph shows Chief of Police Carroll at the wheel.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

The Camden Auto Exchange, of Camden, N. J., has been incorporated with a capital stock of \$25,000, and George W. Smart will be the local manager. The concern will deal in automobiles and supplies.

According to mail advices from France received by the American Locomotive Automobile Company's branch in New York, the Berliet is achieving victories of no less value in Europe than in this country. At the Saltburn races in England a 22-horsepower Berliet won the Rowland Cup and a gold medal by defeating a field of twelve of its own power, and in a strenuous endurance test an 80-horsepower Berliet was victorious, both achievements having been attained in competition with the best makes of foreign cars.

A special round tread racing tire is the latest product of the Michelin et Cie, the French tire makers, and it is coming in for an unusual amount of favorable comment at the hands of its users. It is made with more fabric and with a heavier tread than usual, and though especially designed for racing purposes has also been found equally well adapted for touring, particularly on heavy cars. E. Lamberjack & Co., the local Michelin agents, have had an unusual demand for the new tire during the three months that they have handled it.

It was erroneously reported that Lytle's accident at Detroit on July 4, when his Pope-Toledo went through the track fence, badly smashing the car and spoiling his chances of winning, was due to a bursted tire, as the Hartford Rubber Works Company, Hartford, Conn., took pains to ascertain the true cause of the accident, and found that it was due to the breaking of the staybolt on the detachable rim that was employed, the tire, which was one of the Hartford-Midgley treads, being found in perfect condition after the accident.

H. J. Edwards, chief engineer of the Stoddard-Dayton Company, Dayton, O., who has been largely responsible for the great success of the cars of this make, was given a surprise by C. G. Stoddard, vice-president and general manager of the company, last week. In celebration of the completion of the Type 8F touring car—the latest addition—a dinner was prepared in Mr. Edwards' honor without his knowledge, and he was presented with a huge silver loving cup, which, according to report, was filled with Stoddard-Dayton "enthusiasm."

After several months' work by one of the foremost experts in the country, and at an expense of several thousand dollars, the Hartford Rubber Works Company have just gotten out a most comprehensive road map. It covers all of the territory east of Cleveland and Pittsburgh, north as far as Toronto, showing the best roads in this entire territory to and from the Jamestown Exposition. The map has been made thoroughly up-to-date, for which the latest and most complete touring information has been utilized. Copies will be sent gratis on application to the Hartford factory.

Two additional buildings are shortly to be erected by the Crawford Auto-

motive Company to increase the facilities of its plant at Hagerstown, Md., in order to take care of the large demand for 1908 cars of this make. R. B. Crawford, president of the company, and a member of the Standardization and Technical Committee of the American Motor Car Manufacturers' Association, states that the working force will be increased 40 per cent. and the Crawford output doubled next year. One of the new buildings will house the body building department, and the other the tool room and additional machinery.

The Monarch Motor Car Company broke ground for its new factory at Chicago Heights, just outside the Windy City, on Monday last. The main building, which will be used principally as a machine shop, will be of fireproof construction and have a floor area of 21,000 square feet. It will have a saw-tooth roof and will have metal window frames throughout. Pending the completion of the new building, which has been made necessary through the destruction by fire of the former plant, the company is located in Chicago Heights, about half a mile from the new works.

D'Arcy Scott & Co., San Francisco agents of the Dragon Automobile Company, Philadelphia, have wired that a Dragon car is now on the way to New York in an attempt to break the coast to coast record, now held by the Franklin car, which made the trip in eighteen days. The Dragon, which is on its way, is the same one that broke the 100-mile round-the-bay record in 3.26, or 23 minutes better than the previous performance. Since that time it has been run 2,500 miles. The same crew that handled the car in its former run are now making this latest attempt on the transcontinental figures.

Allegheny County is one of the hilliest in the East and likewise its roads are of the worst, but it is about to set out to make them the best, and, as a preliminary, the commissioners of the county advertised for an automobile. In order to make certain that no mistake should be made in the choice, extended demonstrations were had over some of the worst roads, and the process of elimination ended the other day by the selection of a Winton, the choice probably being influenced by James F. Burke, one of Pittsburgh's pioneer autoists, who represents Allegheny County in Congress, and who swears by the Winton.

J. D. Maxwell, of the Maxwell-Briscoe Motor Company, in an interview, thinks that the standard touring car of the future will be a medium-powered touring car of from 22 to 26 horsepower, and that, although there will always be a demand for very high-powered and fast cars, the average man will think a 24-horsepower sufficient for his requirements. "In fact," says Mr. Maxwell, "horsepower in itself is not so much of a factor as having a car that is efficient in every sense of the word. The power losses between the engine and transmission should be reduced to a minimum, and the weight kept down as low as is consistent with strength."

A business man, residing in Hartford, Conn., and doing business in New Haven, makes from one to three round trips a

day in his 45-horsepower Columbia, and states that he not only makes the trip faster than by train, but he enjoys it as well. Another Columbia owner, a market gardener, used his car to transport his produce by removing the tonneau and substituting a large box, and still another Columbia owner uses his car for transporting merchandise for the firm with which he is associated, and does it far cheaper than it could be done by horses. The above only serves to illustrate that the automobile is the most resourceful vehicle extant.

O. W. Powers, who is one of Utah's leading democratic citizens, came to Peoria, Ill., recently, accompanied by Mrs. Powers and Powers, Jr., to take delivery of a 1907 40-horsepower Glide, in which they left last Tuesday on a 7,000 to 8,000-mile tour of the United States. The Bartholomew Company supplied one of their experts to take charge of the car. From Peoria their route lies across Illinois to Toledo, thence to Cleveland, Buffalo, New York, Alexandria Bay and the Thousand Islands, where some time will be spent. Returning, the route will be via Albany, New York, Philadelphia, Pittsburgh, Cleveland, Chicago, Peoria, Des Moines, Omaha, Denver and Salt Lake City.

Cloud Cap Inn is perched at an elevation of 7,500 feet up on the side of Mount Hood, and, for the first time in the history of automobiling in Oregon, an automobile has succeeded in making the climb. The feat is all the more marvelous as it was accomplished by a single-cylinder machine—the 10-horsepower Cadillac. Several attempts have been made previously without success, and the recent test was made with a view to determining whether it would be practical to install an automobile stage service to the inn from the Hood river. The car was driven up by Howard M. Covey, of Portland, and he thinks that after the road has been put in good condition the run will be an attractive one for tourists from Portland.

Bulletins just issued by the Dayton Electric Manufacturing Company, descriptive of the Apple dynamo storage battery system of "Floating the Battery on the Line," are entitled 1C, 2A, and 5A, and contain a full description of the accessories made by this concern, which has long made a specialty of direct current ignition apparatus. Bulletin 5A is devoted entirely to a description of various attachments for using electric lights in oil lamps, gas lamps, etc., as well as illustrating a full line of lighting fixtures. Copies will be sent gratis on application.

As a result of the confusion that has arisen over the so-called twenty-four-hour records, in some of which several cars have been used, while the entire distance has been made by a single car in others, such as the performances of the Autocar and the Lozier at the Point Breeze track, Philadelphia, the makers of the latter car are endeavoring to have the rules for the Brighton Beach twenty-four-hour race framed so as to cover this point definitely. Those which are to come off on August 9 and 10 are supported by the manufacturers who are attempting to demonstrate the staying

qualities of their cars and the awarding of a prize to a car that may have been on the track but a few hours of the twenty-four is a result of a very unsatisfactory nature in the opinion of the Lozier people.

The Adams & Elting Company, Chicago, Ill., have just completed the purchase of the entire paint, kalsomine and paint specialty business of the Rubber Paint Company, of the same city. This purchase also includes the taking over of the Eureka Elastic Paint Company, a subsidiary concern of the Rubber Paint Company. The latter company was established in 1868, and has made a national reputation, some of its best known lines being rubber paint, Naples velvet finish and Mirror Back paints, all of which will continue to be manufactured under the same formulæ and sold under the same brands as formerly. The officers of the enlarged company are William Porter Adams, president; Joseph Gale, vice-president; Phillip L.F. Elting, general manager and treasurer, and Howard Elting, secretary, no change having been made on account of the consolidation.

NEW AGENCIES ESTABLISHED.

According to a recently published list of automobile dealers in the United States, the H. H. Franklin Manufacturing Company, Syracuse, N. Y., are represented by no less than 106 firms throughout the country. There are 12 in New England, 35 in the Middle Atlantic States, 15 in the Southern, Gulf and Central States, 21 in the Northern Central States and 23 in the Western States, making a total of 106. Work is progressing rapidly on the new concrete addition to the plant and more attention is being paid to the production of commercial vehicles for the season of 1908.

Further evidence of the aggressive campaign being waged by the Corbin Motor Vehicle Corporation, New Britain, Conn., is shown by the number of recent additions to their agency forces, the following well-known dealers being the latest to take on the representation of the "full-jeweled" Corbin: Dupont Garage Company, Washington, D. C.; H. O. Harrison Company, Los Angeles, Cal.; J. Archie Hess, Seattle, Wash.; Ford Latham, Schenectady, N. Y.; Frank P. Moshier, Jr., Greenwich, Conn.; Park Garage Company, Allegheny, Pa.; David L. Parker & Co., New Bedford, Mass., and the Sawyer Carriage Company, Lowell, Mass.

PERSONAL TRADE MENTION.

S. A. Campbell has just resigned as manager of the accessory department of the E. T. Kimball Company, Boston, and will announce his new connection in the near future.

E. Favary, who has been identified with the automobile industry in this country and abroad for the past twelve years, has just severed his connection with the Automobile Auction Company of America and will for some time devote his attention to perfecting several devices connected with the automobile on which he holds patents.

G. L. Lloyd, for the past fifteen years connected with the Avery Stamping Company, Cleveland, O., has just joined the forces of the H. H. Franklin Manufacturing Company, Syracuse, N. Y., and will form a member of the selling staff.

The travelers of the company are now on vacation, immediately at the end of which they will assemble at the factory for annual instruction and preparation for the 1908 selling season.

J. Arthur Hittle, late superintendent of the Marion Motor Works, Indianapolis, Ind., and Charles S. Crawford, of the Lozier Motor Works, Plattsburg, N. Y., have just joined the forces of the Speed Changing Pulley Company, Indianapolis, Ind. Mr. Hittle assumes the position of general superintendent of the rapidly growing engine department of the firm, while Mr. Crawford succeeds F. D. Carrico as mechanical engineer.

THE BOOK OF PACKARD THIRTY.

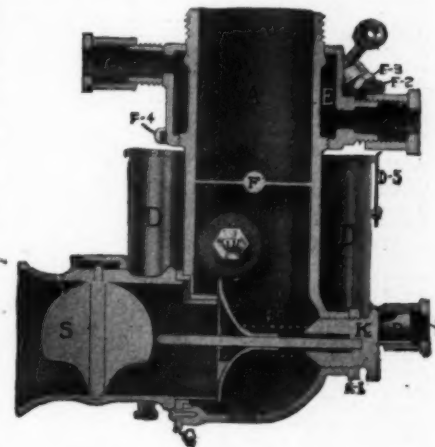
What is without doubt the most artistic example of the printer's and engraver's arts that has ever taken the form of an automobile catalogue is represented by "The Book About Packard Thirty," just issued by the Packard Motor Car Company, Detroit, Mich. It is apparent at a glance that its *raison d'être* is not so much to sell Packard cars as it is to show why they sell themselves. This gem is enclosed in a fitting receptacle of natural veneer bearing the "P 30" escutcheon as well as the name of the recipient in gilt, and the unfolding of a second cover emblazoned with the familiar outline of the car's radiator front and the name Packard across it, is necessary before the jewel itself is revealed.

The cover gives a veined parchment effect, while the body of the work is printed on an appropriate dull cream paper. The frontispiece, consisting of a reproduction of an oil painting by Henry Thiede, entitled "On a Long Road with Many Charming Miles," and depicting a Packard Thirty runabout in a very attractive setting, gives an inkling of the style of what is to come. The brief foreword telling the life history of Packard Thirty and its predecessors, is followed by two heavily illuminated pages in medieval style, setting forth the Packard Ideal. This is followed by several pages appropriately illustrated and describing the various types of bodies supplied. The subject then changes to "The Factory Progressive," a number of pages being devoted to the painstaking methods employed in the Packard plant, while this in turn is followed by a brief two pages entitled "Fifty Thousand Miles," telling of the Packard testing campaign. Several pages descriptive of the mechanism of the Packard Thirty, appropriately illustrated, conclude the work, which is from the pen of E. Ralph Estep, the illustrations and ornamentation being by Henry Thiede and a number of others.

INFORMATION FOR AUTO USERS.

The Hall Carbureter.—The accompanying sectional illustration depicts the construction of the Hall carbureter, manufactured by the Charles E. Hall Company, Buffalo, N. Y., who are successors to the Union Manufacturing & Specialty Company. In placing this carbureter on the market no attempt has been made to evolve a device on revolutionary lines of design, but rather to produce a carbureter that should be the result of close study of the problem, supplemented by experience in the requirements of this most essential function of the automobile motor. The supply of gasoline enters at the point I, filling the float chamber D, the float P being made adjustable on its stem. The necessary

amount of air for normal operation enters at the intake B, which is constantly open, except for the "strangling" valve Q, which regulates the amount of air that enters the mixing chamber. At slow speed the automatic air valve L remains closed, thus



SECTIONAL VIEW OF HALL CARBURETER.

closing the air port, except that portion controlled by the strangling valve just referred to, which causes a partial vacuum in the mixing chamber. As the motor speed increases this vacuum becomes correspondingly greater, causing the automatic air valve L to open, supplying the extra air needed and thus maintaining the character of the mixture constant.

Acetylene Gas Tanks.—Under the title of the Boston Autolight Company, a company has begun the business of manufacturing the "Boston" gas tanks, headquarters being established in the Motor Mart, 224 Pleasant street, Boston, Mass. George S. Atwater, the manager of the company, has been identified with the manufacture of acetylene lamps and generators for bicycle and automobile use for the past ten years, while his associates in the company are men experienced



BOSTON AUTOLIGHT ACETYLENE TANK.

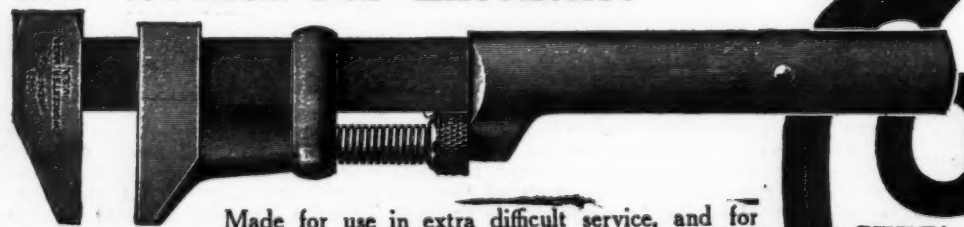
in this line of work. The Boston gas tank is manufactured along standard lines of acetylene gas tank construction and contains a high grade of asbestos packing saturated with chemically pure acetone in such proportion as to give the tank a capacity of 60 cubic feet, the tank dimensions being 6 by 24 inches.

"Waterweb" is the name of a thin, chemically-prepared rainproof fabric which is being manufactured by the Robert G. Wallace Company, 496 Washington Street, Boston, Mass. It is intended chiefly as a hat protector over which it is worn like a veil, though not intended to shield the face. It is made in the shape of a hat and is large enough to protect any headgear from the rain or dust, at the same time being so light and thin that it can be rolled up and tucked away in milady's waist or shopping bag when not in use.

INDEX TO ADVERTISERS

| | | | |
|-----------------------------------|--------------------------------------|------------------------------------|--|
| Acetylene Gas Illuminating Co. 50 | Crawford Inn 63 | Kimball Tire Case Co. 55 | Quinby Co., J. M. 51 |
| Acme Motor Car Co. 54 | Crescent Parts Co. 79 | Kimball & Co., C. P. 53 | Quincy, Manchester, Sargeant Co. 51 |
| Adams Co. 54 | Cullman Wheel Co. 50 | Kinsler-Bennett Co. Cover | Raines & Co. 50 |
| Add-Wear Tire Sleeve Co. 48 | Daimler Mfg. Co. 54 | Kirkham Motor Mfg. Co. 49 | Rainier Co., The. 55 |
| Aerocar Co. 54 | Darracq Motor Car Co. 73 | Kokomo Electric Co. 71 | Ranger Motor Works. 95 |
| Ajax-Grieb Rubber Co. 70 | Dayton Electrical Mfg. Co. 52 | Konigsow, Otto 57 | Reeves Pulley Co. 61 |
| Akron Pneumatic Tire Co. 64 | Dayton Motor Car Co. 73 | Lamberjack & Co., E. 85 | Remy Electric Co. 49 |
| Allyne Brass Foundry Co. 73 | Det. & Buffalo Steamboat Co. 56 | Lavalette & Co. 76 | Renault Freres 102 |
| American Motor Car Co. 103 | Diamond Chain & Mfg. Co. 52 | Lear Automobile Co., Oscar 54 | Richardson Co. 62 |
| Anderson Forge & Machine Co. 52 | Diamond Rubber Co. 86 | Leather Tire Goods Co. 111 | Richardson Eng. Co. 58 |
| Arc Toledo Spark Plug Co. 50 | Dietz Co., R. E. 55 | Limousine-Carriage Mfg. Co. 51 | Robert Instrument Co. 48 |
| Ashtabula Carriage Bow Co. 51 | Dixon Crucible Co., Joseph. 55 | Lobee Pump Co. 50 | Roberts Motor Co. 49 |
| Aster Co., L. 50 | Dolson Automobile Co. 54 | Locke & Co. 67 | Rose Mfg. Co. 68 |
| Atlas Mfg. Co. 48 | Dorris Motor Car Co. 94 | Locomobile Co. of America. 113 | Ross Gear and Tool Co. 52 |
| Atwater-Kent Mfg. Works. 48 | Dover Co., Geo. W. 47 | Logan Construction Co. 47 | Royal Battery Co. 72-106 |
| Atwood Mfg. Co. Cover | Dow Portable Electric Co. 64 | London Auto Supply Co. 67 | Royal Equipment Co. 50 |
| Auburn Automobile Co. 54 | Dragon Automobile Co. 81 | Long Mfg. Co. 59 | Royal Motor Car Co. 100 |
| Auto and Power Appliance Co. 48 | Duplex Coil Co. 71 | Long & Mann Co. 71 | Rushmore Dynamo Works. 74-75 |
| Auto Goods Co. 49 | Eastern Carbon Works. 66 | Lozier Motor Co. 103 | St. Louis Car Company. 110 |
| Auto Improvement Co. 96 | Eco Mfg. Co. 69 | M. & M. Mfg. Co. 66 | St. Louis Motor Car Co. 55 |
| Autocar Co. 108 | Edmunds & Jones Mfg. Co. 49 | McCord Mfg. Co. 59 | Salisbury Wheel Co. 50 |
| Automobile Supply Co. 52 | Eldredge Electric Mfg. Co. 55 | Malone, F. E. 62 | Samson Leather Tire Co. 55 |
| Automobile Trade Directory. 46 | Electric Vehicle Co. 108 | Manhattan Electrical Sup. Co. 49 | Sanford Mfg. Co., F. C. 49 |
| Autoshine Co. 49 | Elmore Mfg. Co. 107 | Manhattan Lamp Works. 55 | Schraeder Sons, A. 73 |
| Avery Portable Lighting Co. 65 | Empire Automobile Tire Co. 61 | Manhattan Storage Co. 56 | Shawver Co. 60 |
| Badger Brass Mfg. Co. 65 | Empire Wheel Works. 58 | Maple City Mfg. Co. 55 | Skinner & Skinner. 100 |
| Bailey & Co., C. J. 84 | Excelsior Supply Co. 48 | Martini Import Co. 61 | Smith Mfg. Co., R. H. 56 |
| Baldwin Chain Mfg. Co. 52 | Firestone Tire & Rubber Co. Cover | Marvel Motor Co. 94 | Snow, H. N. 94 |
| Barnett Drop Forging Co. 61 | Fisk Rubber Co. 93 | Mason, John A. 51 | Speed Changing Pulley Co. 97 |
| Bartholomew Co. 95 | Ford Motor Co. 54 | Mason Motor Car Co. 95 | Spicer Universal Joint Mfg. Co. 49 |
| Barton Mfg. Co. 51 | Forest City Motor Car Co. 94 | Matheson Motor Car Co. 105 | Splitdorf, C. F. 78 |
| Bay State Auto Co. 54 | Franco American Auto Supply Co. 50 | Mayo Radiator Co. 52 | Sprague Umbrella Co. 64 |
| Bay State Stamping Co. 48 | Franklin Mfg. Co., H. H. 54 | Mendenhall, C. S. 56 | Springfield Portable Construction Co. 65 |
| Beaver Mfg. Co. 64 | Fry, T. C. & W. L. 69 | Merkel Motor Co. 50 | Standard Battery Connection Co. 61 |
| Beeler & Robb. 62 | G & J Tire Co. 71 | Merritt & Co. 48 | Standard Co. 70 |
| Bemus, T. Alton. 52 | General Accumulator & Battery Co. 76 | Midgley Mfg. Co. 52 | Standard Roller Bearing Co. 49 |
| Berkshire Motor Car Co. 54 | Gibney & Bros., Jas. L. 49 | Miller Bros. 51 | Standard Welding Co. 87 |
| Bethlehem Steel Co. 77 | Gieseler Bros. 66 | Miller, Chas. E. 72 | Stanley, John T. 73 |
| Billings & Spencer. 47 | Gilbert Mfg. Co. 66 | Mitchell Motor Car Co. 54 | Steam Carriage Boiler Co. 55 |
| Blaser Mfg. Co., M. E. 51 | Goodrich Co., B. F. 88 | Modern Tool Co. 101 | Stearns Co., F. B. 54 |
| Bliss-Chester Co. 48 | Goodrich Tire & Rubber Co. 49 | Moline Automobile Co. 54 | Stevens-Duryea Co. 101 |
| Blomstrom Mfg. Co. 95 | Goodyear Tire & Rubber Co. 49 | Moon Apex Brake Co. 72 | Stewart & Clark Mfg. Co. 83-57 |
| Blomstrom Motor Co., C. H. 61 | Gray-Hawley Mfg. Co. 66 | Morgan & Wright. 77 | Stitch-in-Time Vulcanizer Co. 60 |
| Bloomer, R. E. 52 | Grout Bros. Auto Co. 54 | Mosler & Co., A. R. 42 | Streit Machine Co. 57 |
| Blue Book 53 | Gumelastic Tire Co. 65 | Moss Photo Engraving Co. 62 | Success Auto Buggy Co. 55 |
| Boker & Co., H. 52 | Ham Mfg. Co. 59 | Motor Car Equipment Co. 58 | Sullivan Oil Co. 76 |
| Borbeln Auto Co. 61 | Hancock & Heller. 68 | Motz Clincher Tire & Rubber Co. 68 | Supplementary Spiral Spring. 60 |
| Boesch, Robert. 99 | Harburg Tire Co. 49 | Muller, Albert. 51 | Swinehart Clincher Tire Co. 61 |
| Boston Auto Gage Co. 59 | Hardy Co., The R. E. 56 | Mutty Co., L. J. 51 | Syracuse Alum. & Bronze Co. 52 |
| Bowser & Co., S. F. 55 | Harrington Lubricant Co. 48 | Myers Auto Top Co. 51 | Syracuse Auto Supply Co. 48 |
| Boyle & Co., John. 98 | Harris Oil Co., A. W. 65 | National Brake & Clutch Co. 61 | Teel Mfg. Co. 56 |
| Brennan Motor Co. 67 | Hartford Rubber Works Co. Cover | National Construction Co. 101 | Thomas Auto-Bi Co. 102 |
| Bridgeport Vehicle Co. 51 | Hartford Suspension Co. 82 | National Motor Vehicle Co. 109 | Thomas Motor Co., E. R. 104 |
| Briscoe Mfg. Co. 52 | Hatcher Auto Parts Co. 64 | National Oil Pump & Tank Co. 49 | Thompson, J. P. Sons Co. 59 |
| Brownell-Trebert Co. 57 | Havoline Oil Co. 60 | Neustadt Auto & Supply Co. 95 | Timken Roller Bearing Axle. 89 |
| Buckeye Jack Mfg. Co. 64 | Haynes Automobile Co. 54 | New Process Rawhide Co. 66 | Traver Blow Out Patch Co. 61 |
| Buckeye Mfg. Co. 100 | Healy Leather Tire Co. 49 | N. Y. & N. J. Lub. Co. 66 | Trebert Gas Engine Co. 55 |
| Bullard, J. H. 59 | Heath Dry Gas Co. 50 | No-Match Electric Mfg. Co. 50 | Trident Tire Co. 50 |
| Buob & Scheu. 51 | Heltger Carburetor Co. 74 | Nordyke & Marmon Co. 54 | Tucker, C. F. 48 |
| Cadillac Motor Car Co. 104 | Heinze Electric Co. 70 | Northern Motor Car Co. 105 | Turner Brass Works. 61 |
| Cast Iron Brazing Co. 52 | Hercules Auto Specialty Co. 78 | Nuttall Co., R. D. 52 | U. S. Fastener Co. 70 |
| Central Body Co. 51 | Hercules Electric Mfg. Co. 50 | Nutting Machine Co. 67 | Uncas Specialty Co. 60 |
| Chadwick Engineering Works. 54 | Herschell-Spillman Co. 48 | Ofeldt & Sons. 50 | Vacuum Oil Co. 72 |
| Champion Co., A. 67 | Herz & Co. 58 | Old Colony Light Co. 50 | Veeder Mfg. Co. 91 |
| Charter & Co. 56 | Hess-Bright Co. 52 | Oliver Instrument Co. 65 | Walker Carriage Co. 51 |
| Chelsea Clock Co. Cover | Hicks Speed Indicator Co. 95 | Ovington Motor Co. 48 | Walker Co., E. C. 56 |
| Chicago Portable House Co. 66 | Hoffecker Co. 59 | Packard Electric Co. 48 | Walker & Co., Geo. H. 49 |
| Clair, J. C. 46 | Hoffman, Geo. W. 50 | Packard Motor Car Co. 114 | Warner Instrument Co. 92 |
| Clark, E. S. 48 | Holley Bros. Co. 97 | Pacific Tucking & Mfg. Co. 48 | Warner Pole & Top Co. 51 |
| Cleanola Co. 56 | Holsman Automobile Co. 108 | Page-Storm Drop Forge Co. 47 | Waukesha Motor Co. 109 |
| Coes Wrench Co. 44 | Hotchkiss Mfg. Co. 48 | Pantasote Co. 48 | Weber Co., O. F. 48 |
| Colgan Co., J. W. 102 | Hotel Crawford 63 | Parish & Bingham Co. 52 | Weed Chain Tire Grip. 76 |
| Colt Runabout Co. 100 | Hotel Cumberland 62 | Pease & Sons, S. C. 51 | Welch Motor Car Co. 55 |
| Connecticut Steel & Wire Co. 55 | Hotel Garde 63 | Pedersen Mfg. Co. 50 | Western Malleable Steel Co. 52 |
| Conn. Tel. & Elec. Co. 55 | Hotel Greenbrier 62 | Penna. Auto Motor Co. 64 | Western Tool Works. 95 |
| Conover Motor Car Co. 68 | Hotel Kuloff Cover | Peugeot Freres 89 | Weston Elec. Instrument Co. 59 |
| Continental Auto. Mfg. Co. 108 | Hotel Lafayette 63 | Pierantle Elec. Laboratory. 67 | Wheeler & Schebler. 90 |
| Continental Caoutchouc Co. 49 | Hotel Niagara 62 | Pierrelli & Co. 49 | White Co., The. 112 |
| Continental Motor Mfg. Co. 57 | Hotel Rudolph 62 | Pioneer Brass Works. 52 | Whitlock Coil Pipe Co. 49 |
| Corbin Motor Vehicle Corp. 110 | Huntington Automobile Co. 65 | Pope Motor Car Co. 107 | Whitney Mfg. Co. 70 |
| Corcoran Lamp Co. 52 | Hydraulic Pressed Steel Co. 52 | Post & Lester Co. 50-57-65 | Winchester Speedometer Co. 60 |
| Cornish-Friedburg Motor Car. 102 | Idium Metal Co. 61 | Powell Muffler & Timer Co. 49 | Wing, Chas. 51 |
| Covert Mfg. Co. 49 | Indestructible Steel Wheel Co. 66 | Precision Appliance Co. 78 | Winton Motor Carriage Co. 116 |
| Cowles & Co., C. 51 | Jackson Automobile Co. 54 | Premier Motor Mfg. Co. 96 | Witherbee Igniter Co. 79 |
| Crawford Automobile Co. 54 | Jeffery & Co., Thos. B. 115 | Prest-O-Lite Co. 68 | Wyckoff Lumber & Mfg. Co. 99 |
| | Jersey Brake Co. 55 | Progressive Mfg. Co. 78 | Wyman & Gordon Co. 47 |
| | Johnson Sporting Goods Co., I. 51 | Prosser & Sons, Thos. 52 | York Motor Car Co. 54 |

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91

91